TSCA NON-CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT DESCRIPTION	DOCUMENT CONTROL NUMBER	DATE RECEIVED
P-10-415	51100000415	6-10-10

COMMENTS:

ORIGINAL

DOES NOT CONTAIN CBI

327536

RECEIVED

10 JUN 10 AM 6:03

CS Regulatory Ltd
The Old Courthouse
St Peters Churchyard
Derby
DE1 1NN

Tel / Fax: 0044 1332 380692
E-mail: helpline@csregulatory.com
Website: www.csregulatory.com

Regulatory Affairs Made Easy

2nd June 2010

P-10-415

Office of Pollution Prevention and Toxics
Document Control Office (7407M)
US EPA, 1201 Constitution Ave NW
WASHINGTON, D.C. 20460

CONTAIN NO CBI

Ref: Let-PMNSub-CAD/020610

Dear Sir / Madam,

RE: PMN Application for Delacal 420. TS Number 9BZ9B0

Our client recently submitted the above application; however this was unfortunately was not received at your offices in time for processing, as this was presented on EPA Form 7710-25 which we understand became redundant on 6th April 2010. A copy of your letter is attached. The submission has therefore been reprocessed using EPA Form 7710-25 (Rev 6-09); utilising the e-PMN software, which we believe will now be acceptable.

If I can clarify the following points with regards to the submission:

1) The substance is manufactured in the UK by Delamin Limited of 4 Royal Scot Road Pride Park, Derby, DE24 8AJ, United Kingdom. Delamin Limited intend to provide the substance to H&M Metal Processing as described in the PMN documentation upon acceptance by yourselves at the EPA (and in accordance with the relevant timescales).

2) H&M Metal Processing will be the organization submitting this PMN within the US on the behalf of Delamin.

3) To minimize works to H&M Metal Processing, Delamin Ltd have an agent, Mr Gerry Myers, who will be the main contact for these works in the US. This is also detailed within the PMN Documentation.

4) Delamin Limited made payment to the EPA for the original review, which was rejected. This was paid using cheque number 001405, and referenced with the above TS number. We understand that these funds have been cashed and have cleared; hence payment for this revised submission should be cleared.

Cont'd

5) CS Regulatory Ltd have assisted Delamin Ltd with the production of the PMN, and have been requested to submit this on Delamin's behalf; hence this letter of communication.

6) 2 copies of the PMN and all relevant documentation are enclosed with this submission.

I trust that this PMN package can be well received, and we look forward to the further comments of the EPA in due course.

With best regards,

Craig Deegan
Director

Tel / Fax: +44 1332 380692
Cell: +44 7590 850134
Skype: craig.deegan
e-mail: cdeegan@csregulatory.com.

Enc.

2 x copies of PMN Application for Delacol 420. TS Number 9BZ9B0

ML-41340

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Mr. Gerry Meyers
1013 Summerfield Drive
Maryville, Tennessee 37801-8995

April 13, 2010

CONTAINS NO CBI

Dear Submitter: TS 9BZ9B0

This letter serves to notify you that your company's Premanufacturer Notice referenced above contained errors, and under the Environmental Protection Agency's (EPA) policy put into effect January 26, 1998 (see attached) is rejected. This PMN was dated 3/30/10 and received by the Agency on April 13, 2010.

The reasons for which your PMN notice was rejected can be found at the end of this letter. Since your notice has only undergone a preliminary review, further review could identify additional chemical identify/nomenclature errors. According to 40 CFR 721.45 (60FR 16310) effective May 30, 1995, submitters must provide a Chemical Abstract (CA) Index Name or CA Preferred Name that follows the Ninth Collective Index (CI) Index Name or CA Preferred Name that follows the Ninth Collective Index (9CI) of CA nomenclature rules and conventions.

As provided in 40 CFR 720.65 the 90-day review period will NOT commence until the EPA has received a complete and accepted PMN.

The EPA request that you company resubmit your PMN including the information identified as necessary to complete your submission. If you decide to complete the PMN, then you must resubmit the entire PMN, including information necessary to complete your submission and an original signature. A partial submission will not be accepted.

Pursuant to 40 CFR 720.65 (c)(4), within ten days of receiving this letter, you may file written objections requesting that the EPA accept the submission as a complete notice or modify the requirements necessary to complete the submission. The EPA will respond within ten days of receiving such objections.

Effective April 6, 2010, the old Premanufacturer Notice form will no longer be accepted. The new form can be found by going to www.epa.gov/oppt/newchems/epmn/epmn-index.htm . As of

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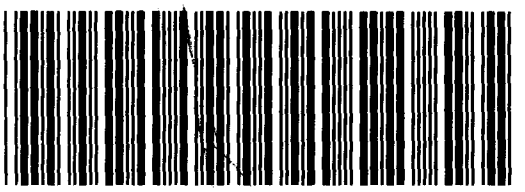

Content description

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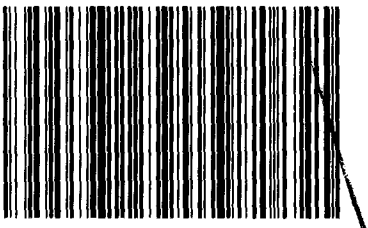


(J)JD01 3044 2037 9006 1863

CONTAIN NO CBI

PMN2010P1

327536

PMN Page 1

NON-CBI SUBMISSION

RECEIVED

Form Approved. O.M.B. Nos. 2070-0012 and 2070-0038

U.S. ENVIRONMENTAL PROTECTION AGENCY	AGENCY USE ONLY
EPA 5 1 1 0 0 0 0 0 4 1 5	Date of receipt: 10 JUN 10 AM 6:03
	51100000415 P-10-415
When completed, send this form to: Office of Documer ics US EPA, WASHINGTON, D.C. 20460 Contact Numbers: 202-564-8930/8940 WASHINGTON, D.C. 20460	Submission Report Number: DELA100602578127365

Total Number of Pages	User Fee Payment ID Number	TS Number
58	Cheque number 001045 from Delamin Ltd, UK	9BZ9B0

GENERAL INSTRUCTIONS

- You must provide all information requested in this form to the extent that it is known to or reasonably ascertainable by you Make reasonable estimates if you do not have actual data
- Before you complete this form, you should read the "Instructions Manual for Premanufacture Notification" (the Instructions Manual is available from the Toxic Substances Control Act (TSCA) Information Service by calling 202-554-1404, or faxing 202-554-5603)
- If a user fee has been remitted for this notice (40 CFR 700 45), indicate in the boxes above the TS-user fee identification number you have generated Remember, your user fee ID number must also appear on your corresponding fee remittance For mailing address information see the Help instructions in the e-PMN tool

Part I – GENERAL INFORMATION

You must provide the currently correct Chemical Abstracts (CA) Name of the new chemical substance, even if you claim the identity as confidential You may authorize another person to submit chemical identity information for you, but your submission will not be complete and the review will not begin until EPA receives this information A letter in support of your submission should reference your TS user fee identification number. For all Section 5 Notice submissions (paper or electronic) you must submit an original notice including all test data, if you claimed any information as confidential, an original sanitized copy must also be submitted

Part II – HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE

If there are several manufacture, processing, or use operations to be described in Part II, sections A and B of this notice, reproduce the sections as needed.

Part III – LIST OF ATTACHMENTS

For paper submissions, attach additional sheets if there is not enough space to answer a question fully. Label each continuation sheet with the corresponding section heading In Part III, list these attachments, any test data or other data and any optional information included in the notice.

OPTIONAL INFORMATION

You may include any information that you want EPA to consider in evaluating the new substance. On page 11 of this form, space has been provided for you to describe pollution prevention and recycling information you may have regarding the new substance. "Binding" boxes are included throughout this form for you to indicate your willingness to be bound to certain statements you make in this section, such as use, production volume, protective equipment The intention is to reduce delays that routinely accompany the development of consent orders or Significant New Use Rules Checking a "binding" box in a PMN does not by itself prohibit the submitter from later deviating from the information (except chemical identity) reported in the form, however, in the case of exemption applications (such as TMEA, LVE, LOREX) certain information provided in such notifications is binding on the submitter when the Agency approves the exemption application, especially if the production volume "binding" box is chosen in a LVE.

CONFIDENTIALITY CLAIMS

You may claim any information in this notice as confidential To assert a claim on the form, mark (X) the confidential box next to the information that you claim as confidential To assert a claim in an attachment, circle or bracket the information you claim as confidential. If you claim information in the notices as confidential, you must also provide a sanitized version of the notice, (including attachments). For additional instructions on claiming information as confidential, read the Instructions Manual

TEST DATA AND OTHER DATA

You are required to submit all test data in your possession or control and to provide a description of all other data known to or reasonably ascertainable by you, if these data are related to the health and environmental effects on the manufacture, processing, distribution in commerce, use, or disposal of the new chemical substance. Standard literature citations may be submitted for data in the open scientific literature Complete test data (written in English), not summaries of data, must be submitted if they do not appear in the open literature. You should clearly identify whether test data is on the substance or on an analog Also, the chemical composition of the tested material should be characterized Following are examples of test data and other data. Data should be submitted according to the requirements of §720.50 of the Premanufacture Notification Rule (40 CFR Part 720)

Test Data (Check Below any included in this notice)

[ ]	Environmental fate data	[X]	Other Data
[ ]	Health effects data	[ ]	Risk Assessments
[ ]	Environmental effects data	[X]	Structure/activity relationships
[X]	Physical/Chemical Properties (A physical and chemical properties worksheet is located on the last page of this form.)		
[ ]	Test data not in the possession or control of the submitter		

TYPE OF NOTICE (Check Only One)

- [X] **PMN** (Premanufacture Notice)
- [ ] **SNUN** (Significant New Use Notice)
- [ ] **TMEA** (Test Marketing Exemption Application)
- [ ] **LVE** (Low Volume Exemption) @ 40 CFR 723 50(c)(1)
- [ ] **LOREX** (Low Release/Low Exposure Exemption) @ 40 CFR 723 50(c)(2)
- [ ] **LVE** Modification
- [ ] **LOREX** Modification
- [ ] **Mock Submission**
- [ ] Mark (X) if pending Letter of Support

IS THIS A CONSOLIDATED PMN (Y/N)? ____

# of chemicals or polymers (Prenotice Communication # required, enter # on p. 3) ____

- [ ] Mark (X) if any information in this notice is claimed as confidential

The public reporting and recordkeeping burden for this collection of information is estimated to average 93 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed EPA Form 7710-25 to this address.

CERTIFICATION -- A printed copy of this signature page, with original signature, must be submitted with CD or paper submission.

I certify that to the best of my knowledge and belief:

1. The company named in Part I, section A, subsection 1a of this notice form intends to manufacture, import or process for a commercial purpose, other than in small quantities solely for research and development, the substance identified in Part I, Section B.
2. All information provided in this notice is complete and truthful as of the date of submission.
3. I am submitting with this notice all test data in my possession or control and a description of all other data known to or reasonably ascertainable by me as required by §720.50 of the Premanufacture Notification Rule.

Additional Certification Statements:

If you are submitting a PMN, Intermediate PMN, Consolidated PMN, or SNUN, check the following **user fee** certification statement that applies:

- [ ] The Company named in Part I, Section A has remitted the fee of $2500 specified in 40 CFR 700.45(b), or
- [ ] The Company named in Part I, Section A has remitted the fee of $1000 for an Intermediate PMN (defined @ 40 CFR 700.43) in accordance with 40 CFR 700.45(b), or
- [X] The Company named in Part I Section A is a small business concern under 40 CFR 700.43 and has remitted a fee of $100 in accordance with 40 CFR 700.45(b).

If you are submitting a **Low Volume Exemption (LVE)** application in accordance with 40 CFR 723.50(c)(1) or a **Low Release and Low Exposure Exemption (LoRex)** application in accordance with 40 CFR 723.50(c)(2), check the following certification statements:

- [ ] The manufacturer submitting this notice intends to manufacture or import the new chemical substance for commercial purposes, other than in small quantities solely for research and development, under the terms of 40 CFR 723.50.
- [ ] The manufacturer is familiar with the terms of this section and will comply with those terms; and
- [ ] The new chemical substance for which the notice is submitted meets all applicable exemption conditions.
- [ ] If this application is for an LVE in accordance with 40 CFR 723.50(c)(1), the manufacturer intends to commence manufacture of the exempted substance for commercial purposes within 1 year of the date of the expiration of the 30 day review period.

The accuracy of the statements you make in this notice should reflect your best prediction of the anticipated facts regarding the chemical substance described herein. Any knowing and willful misrepresentation is subject to criminal penalty pursuant to 18 USC 1001.				Confidential
Signature and title of Authorized Official (Original Signature Required)	[signature]	Date	5/26/10	[ ]

PMN Page 3

Part I -- GENERAL INFORMATION

Section A – SUBMITTER IDENTIFICATION

Mark (X) the "Confidential" box next to any subsection you claim as confidential

1a.	Person Submitting Notice (in U.S.)					Confidential
Name of Authorized Official	(first) Robert			(last) McMillan		
Position	Manager					
Company	H&M Metal Processing					
Mailing Address (number & street)	1850 Front Street					
City	Cuyahoga Falls	State	OH	Postal Code	44222	
email	rsmcmillen@aol.com					

b.	Agent (if Applicable)					Confidential
Name of Authorized Official	(first) Gerry			(last) Meyers		
Position	Consultant					
Company	None					
Mailing Address (number & street)	1013 Summerfield Drive					
City	Maryville	State	TN	Postal Code	37801	
e-mail	Meyersgfm@aol.com		Telephone (include area code)		865-681-5299	

c.	Joint Submitter (if applicable)					Confidential
If you are submitting this notice as part of a joint submission, mark (X)	☐					
Name of Authorized Official	(first)			(last)		
Position						
Company						
Mailing Address (number & street)						
City		State		Postal Code		
e-mail			Telephone (include area code)			

2.	Technical Contact (in U.S.)					Confidential
Name of Authorized Official	(first) Gerry			(last) Meyers		
Position	Consultant					
Company	None					
Mailing Address (number & street)	1013 Summerfield Drive					
City	Maryville	State	TN	Postal Code	37801	
e-mail	Meyersgfm@aol.com		Telephone (include area code)		865-681-5299	

			Mark (X) if none	Confidential
3.	If you have had a prenotice communication (PC) concerning this notice and EPA assigned a PC Number to the notice, enter the number.		☒	☐
4.	If you previously submitted an exemption application for the chemical substance covered by this notice, enter the exemption number assigned by EPA. If you previously submitted a PMN for this substance enter the PMN number assigned by EPA (i.e. withdrawn or incomplete).	ML-41340	☐	☐
5.	If you have submitted a notice of Bona fide intent to manufacture or import for the chemical substance covered by this notice, enter the notice number assigned by EPA.		☒	☐

6.	Type of Notice – Mark (X)						
1.	Manufacture Only ☐ Binding Option ☐	2.	Import Only ☒ Binding Option ☐	3.	Both ☐		

Part I – GENERAL INFORMATION -- Continued

Section B – CHEMICAL IDENTITY INFORMATION: You must provide a currently correct Chemical Abstracts (CA) name of the substance based on current CA index nomenclature rules and conventions.

Mark (X) the "Confidential" box next to any item you claim as confidential

Complete either item 1 (Class 1 or 2 substances) or 2 (Polymers) as appropriate. Complete all other items.

If another person will submit chemical identity information for you (for either Item 1 or 2), mark (X) the box at the right. Identify the name, company, and address of that person in a continuation sheet ☐

1. Class 1 or 2 chemical substances (for definitions of class 1 and class 2 substances, see the Instructions Manual)	Class 1	Class 2	CBI
a. Class of substance - Mark (X)	X	☐	☐

b. Chemical name (Currently correct Chemical Abstracts (CA) Name that is consistent with TSCA Inventory listings for similar substances. For Class 1 substances a CA Index Name must be provided. For Class 2 substances either a CA Index Name or CA Preferred Name must be provided, which ever is appropriate based on current CA index nomenclature rules and conventions). ☐

1,3,4,6,7,9,9b-heptaazaphenalene-2,5,8-triamine

CAS Registry Number (if a number already exists for the substance)	1502-47-2	

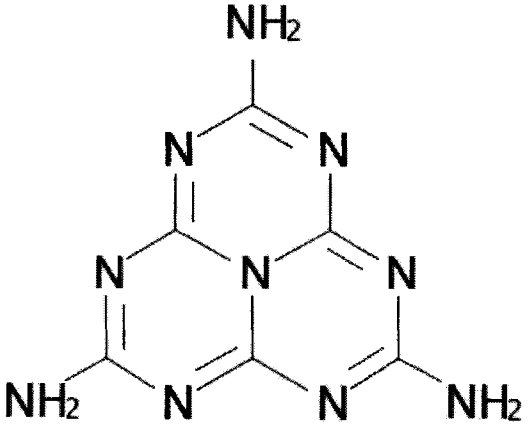
c. Please identify which method you used to develop or obtain the specified chemical identity information reported in this notice· (check one)

Method 1 (CAS Inventory Expert Service - a copy of the Identification report obtained from the CAS Inventory Expert Services must be submitted as an attachment to this notice) ☐	IES Order Number		**Method 2** (Other Source) X	

Enter Attachment filename for Part I, Section B, 1. c.		☐

d. Molecular formula	C6H6N10	☐

e. For a class 1 substance, provide a complete and correct chemical structure diagram. For a class 2 substance, provide a correct representative or partial chemical structure diagram, as complete as can be known, if one can be reasonably ascertained. ☐



Enter Attachment filename for Part I, Section B, 1 e.	Delacal 420.jpg ATTACHMENT 001	☐

PMN Page 4a

For a class 2 substance - (1) List the immediate precursor substances with their respective CAS Registry Numbers. (2) Describe the nature of the reaction or process. (3) Indicate the range of composition and the typical composition (where appropriate).	Confidential

e (1) List the immediate precursor substance names with their respective CAS Registry Numbers. ☐

Not applicable

Enter Attachment filename for Part I, Section B, 1. e. (1)	☐

e. (2) Describe the nature of the reaction or process. ☐

Not applicable

Enter Attachment filename for Part I, Section B, 1. e. (2)	☐

e. (3) Indicate the range of composition and the typical composition (where appropriate). ☐

Not applicable

Enter Attachment filename for Part I, Section B, 1. e. (3)	☐

Part I -- GENERAL INFORMATION – Continued

Section B -- CHEMICAL IDENTITY INFORMATION -- Continued

2 Polymers (For a definition of polymer, see the Instructions Manual.)	Confidential
a. Indicate the number-average weight of the lowest molecular weight composition of the polymer you intend to manufacture. Indicate maximum weight percent of low molecular weight species (not including residual monomers, reactants, or solvents) below 500 and below 1,000 absolute molecular weight of that composition.	☐

Describe the methods of measurement or the basis for your estimates:

GPC ☐	**Other** (Specify Below) ☐	

Specify Other:

(i) lowest number average molecular weight·	(ii) maximum weight % below 500 molecular weight:	(iii) maximum weight % below 1000 molecular weight·

Enter Attachment filename for Part I, Section B, 2. a.	☐

b. You must make separate confidentiality claims for monomer or other reactant identity, composition information, and residual information. Mark (X) the "Confidential" box next to any item you claim as confidential

(1) - Provide the specific chemical name and CAS Registry Number (if a number exists) of each monomer or other reactant used in the manufacture of the polymer.
(2) - Mark (X) this column if entry in column (1) is confidential
(3) - Indicate the typical weight percent of each monomer or other reactant in the polymer.
(4) - Choose "yes" from drop down menu if you want a monomer or other reactant used at two weight percent or less to be listed as part of the polymer description on the TSCA Chemical Substance Inventory.
(5) - Mark (X) this column if entries in columns (3) and (4) are confidential.
(6) - Indicate the maximum weight percent of each monomer or other reactant that may be present as a residual in the polymer as manufactured for commercial purposes.
(7) - Mark (X) this column if entry in column (6) is confidential.

Monomer or other reactant specific chemical name (1)	CBI (2)	Typical composition (3)	Include in identity (4)	CBI (5)	Max residual (6)	CBI (7)
CAS Registry Number (1)						
CAS Registry Number (1)						
CAS Registry Number (1)						
CAS Registry Number (1)						
CAS Registry Number (1)						

Mark (X) this box if the data continues on the next page. ☐

PMN Page 5a

c. Please identify which method you used to develop or obtain the specified chemical identity information reported in this notice (check one).					CBI
Method 1 (CAS Inventory Expert Service - a copy of the identification report obtained from CAS Inventory Expert Service must be submitted as an attachment to this notice) ☐	IES Order Number		**Method 2** (other source) ☐		
Enter Attachment filename for Part I, Section B, 2. c.					☐

d The currently correct Chemical Abstracts (CA) name for the polymer that is consistent with TSCA Inventory listings for similar polymers.	☐

CAS Registry Number (if a number already exists for the substance)		

e Provide a correct representative or partial chemical structure diagram, as complete as can be known, if one can be reasonably ascertained	☐

Enter Attachment filename for Part I, Section B, 2. e	☐

Part I -- GENERAL INFORMATION -- Continued

Section B -- CHEMICAL IDENTITY INFORMATION -- Continued

3 Impurities
(a) - Identify each impurity that may be reasonably anticipated to be present in the chemical substance as manufactured for commercial purpose. Provide the CAS Registry Number if available. If there are unidentified impurities, enter "unidentified."
(b) - Estimate the maximum weight % of each impurity. If there are unidentified impurities, estimate their total weight %.

Impurity (a)	CAS Registry Number (a)	Maximum Percent % (b)	Confi-dential
Melamine	108-78-1	0 5	
Water	7789-20-0	1.5	

Mark (X) this box if the data continues on the next page. ☐

Enter Attachment filename for Part I, Section B, 3. ATTACHMENT 003 ☐

4. Synonyms - Enter any chemical synonyms for the new chemical identified in subsection 1 or 2.
Melem ☐

Enter Attachment filename for Part I, Section B, 4. ☐

5. Trade identification - List trade names for the new chemical substance identified in subsection 1 or 2.
Delacal 420 ☐

Enter Attachment filename for Part I, Section B, 5. ☐

6. Generic chemical name - If you claim chemical identify as confidential, you must provide a generic name for your substance that reveals the specific chemical identity of the new chemical substance to the maximum extent possible. Refer to the TSCA Chemical Substance Inventory, 1985 Edition, Appendix B for guidance on developing generic names.

Not applicable.

Enter Attachment filename for Part I, Section B, 6.

7. Byproducts - Describe any byproducts resulting from the manufacture, processing, use, or disposal of the new chemical substance. Provide the CAS Registry Number if available.

Byproduct (1)	CAS Registry Number (2)	Confi-dential
None		

Mark (X) this box if the data continues on the next page. ☐

Part I -- GENERAL INFORMATION -- Continued

Section C -- PRODUCTION, IMPORT, AND USE INFORMATION:

The information on this page refers to consolidated chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Mark (X) the "Confidential" box next to any item you claim as confidential.

1. **Production volume** -- Estimate the **maximum** production volume during the first 12 months of production. Also estimate the maximum production volume for any consecutive 12-month period during the first three years of production. Estimates should be on 100% new chemical substance basis For a Low Volume Exemption application, if you choose to have your notice reviewed at a lower production volume than 10,000 kg/yr, specify the volume and mark (x) in the binding box. If granted, you are bound to this volume.

Maximum first 12-month production (kg/yr) (100% new chemical substance basis)	Maximum 12-month production (kg/yr) (100% new chemical substance basis)	Confidential	Binding Option Mark (X)
100000	200000	☐	☐

Enter Attachment filename for Part I, Section C, 1.		CBI ☐

2. **Use Information** -- You must make separate confidentiality claims for the description of the category of use, the percent of production volume devoted to each category, the formulation of the new substance, and other use information. Mark (X) the "Confidential" Box next to any item you claim as confidential.
   a. (1) --Describe each intended category of use of the new chemical substance by function and application.
   (2) --Mark (X) this column if entry column (1) is confidential business information (CBI).
   (3) --Indicate your willingness to have the information provided in column (1) binding.
   (4) --Estimate the percent of total production for the first three years devoted to each category of use.
   (5) --Mark (X) this column if entry in column (4) is confidential business information (CBI).
   (6) --Estimate the percent of the new substance as formulated in mixtures, suspensions, emulsions, solutions, or gels as manufactured for commercial purposes at sites under your control associated with each category of use.
   (7) --Mark (X) this column if entry in column (6) is confidential business information (CBI).
   (8) --Indicate % of product volume expected for the listed "use" sectors. Mark more than one box if appropriate. Mark (X) to indicate your willingness to have the use type provided in (8) binding.
   (9) --Mark (X) this column if entry(ies) in column (8) is (are) confidential business information (CBI).

Category of use (1) (by function and application i.e a dispersive dye for finishing polyester fibers)	CBI (2)	Binding Option Mark (X) (3)	Production % (4)	CBI (5)	% in Formulation (6)	CBI (7)	% of substance expected per use (8)					CBI (9)
							Site-limited	Consumer*	Industrial	Commercial	Binding Option	
Flame retardant additive for polymeric products (plastics etc)			100		100		0	0	100	0		

* If you have identified a "consumer" use, please provide on a continuation sheet a detailed description of the use(s) of this chemical substance in consumer products. In addition include estimates of the concentration of the new chemical substance as expected in consumer products and describe the chemical reactions by which this substance loses its identity in the consumer product.

Mark (X) this box if the data continues on the next page. ☐

b. Generic use description — If you claim any category of use description in subsection 2a as confidential, enter a generic description of that category Read the Instruction Manual for examples of generic use descriptions.

See continuation page. id: <P7SC2bC1>

Enter Attachment filename for Part I, Section C, 2. b.	ATTACHMENT 002.	CBI ☐

3. **Hazard Information** -- Include in the notice a copy of reasonable facsimile of any hazard warning statement, label, material safety data sheet, or other information which will be provided to any person who is reasonably likely to be exposed to this substance regarding protective equipment or practices for the safe handing, transport, use, or disposal of the new substance. List in part III hazard information you include.

Mark (X) this box if you attach hazard information.	☒	Binding Option Mark (X) ☐

Continuation Sheet

ID	P7SC2bC1	Field	Part I, Section C, 2.b. Generic use description

The PMN substance, Delacal 420, is a flame retardant additive used to improve fire safety of flexible polyurethane foams, polyamides (nylons) and thermoplastic polyurethanes. It acts by a combination of effects: in contact with heat it decomposes, acting as a heat sink, and release inert nitrogen gases which dilute the oxygen and flammable gases. It also chemically and physically (char formation) inhibits burning, and contributes to intumescent coating formation (blows char into a protective foam which prevents dripping).

The substance is manufactured outside of the United States in Europe (United Kingdom). The material is imported within 20kg polyethylene lines bags as "neat" powder into the US for direct use as a flame retardant in the manufacture of various plastic and foam products. As such, it is intended to be handled by skilled workforce members only, utilizing the appropriate good industrial hygiene practices and personal protective equipment during use to minimize any potential for exposure to man or the environment.

Standard industrial applications are used for 'blending' or 'compounding' Delacal 420 with other plastic additives such as pigments, stabilizers, etc for extrusion or molding of plastic or foam based products. The substance is proposed to be added as a total of 5 to 7% w/w into such finished products; this will be product dependant but should not exceed this proposed content application. Production waste from such "use" sites is generally removed by licensed waste disposal companies for subsequent incineration, in compliance with the local state regulations.

The PMN substance or the products containing it will never be available to end users or consumers in a form that could allow for exposure to the substance. Following the manufacture of final goods, the PMN substance will be duly bound within the polymeric type matrix of the final product. Therefore, for the purposes of TSCA, the PMN substance will only ever be distributed to customers and consumers in commerce as part of an article, for which there is no envisaged release. At the end of life, such waste articles may be disposed into landfill or according to local state regulation by end users, in compliance with the relevant legislation.

Please refer to Attachments 2 and 3

Part II-- HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE

Section A -- INDUSTRIAL SITES CONTROLLED BY THE SUBMITTER

Mark (X) the "Confidential" box next to any item you claim as confidential

The information on pages 8 and 8a refer to consolidated chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Complete section A for each type of manufacture, processing, or use operation involving the new chemical substance at industrial sites you control. Importers do not have to complete this section for operations outside the U.S.; however, you may still have reporting requirements if there are further industrial processing or use operations after import. You must describe these operations. See instructions manual

1. Operation description

a. Identity -- Enter the identity of the site at which the operation will occur.

				Confi-dential
Name	H&M Metal Processing			
Site address (number and street)	1850 Front Street			☐
City	Cuyahoga Falls	County		
State	OH	ZIP code	44222	

If the same operation will occur at more than one site, enter the number of sites. Identify the additional sites on a continuation sheet, and if any of the sites have significantly different production rates or operations, include all the information requested in this section for those sites as attachments. → 1 ☐

Mark (X) this box if the data continues on the next page ☐

b. Type -- Mark (X) Manufacturing ☐ Processing ☒ Use ☐ ☐

c. Amount and Duration -- Complete 1 or 2 as appropriate

				Confi-dential
1. Batch	Maximum kg/batch (100% new chemical substance)	Hours/batch	Batches/year	☐
	100	2	1000	
2. Continuous	Maximum kg/day (100% new chemical substance)	Hours/day	Days/year	☐

d. Process description — Mark (X) to indicate your willingness to have your process description binding. → ☐

(1) Diagram the major unit operation steps and chemical conversions Include interim storage and transport containers (specify- e.g. 5 gallon pails, 55 gallon drum, rail car, tank truck, etc.).

(2) Provide the identity, the approximate weight (by kg/day or kg/batch on a 100% new chemical substance basis), and entry point of all starting materials and feedstocks (including reactants, solvents, catalysts, etc.), and of all products, recycle streams, and wastes Include cleaning chemicals (note frequency if not used daily or per batch).

(3) Identify by number the points of release, including small or intermittent releases, to the environment of the new chemical substance If releasing to two media at the same step, assign a second release number for the second medium.

☐

Please refer to attachments 2 and 3 respectively for details of operational steps.

PMN Page 8a

Diagram of the major unit operation steps.	Confidential ☐

Enter Attachment filename for Part II, Section A, 1. d.	ATTACHMENT 02	☐

PMN Page 9

Part II-- HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE -- Continued

Section A -- INDUSTRIAL SITES CONTROLLED BY THE SUBMITTER -- Continued

The information on pages 9 and 9a refer to consolidated chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

2. Occupational Exposure -- You must make separate confidentiality claims for the description of worker activity, physical form of the new chemical substance, number of workers exposed, and duration of activity. Mark (X) the "Confidential" box next to any item you claim as confidential.

(1) -- Describe the activities (i.e. bag dumping, tote filling, unloading drums, sampling, cleaning, etc.) in which workers may be exposed to the substance.
(2) -- Mark (X) this column if entry in column (1) is confidential business information (CBI).
(3) -- Describe any protective equipment and engineering controls used to protect workers.
(4) and (6) -- Indicate your willingness to have the information provided in column (3) or (5) binding.
(5) -- Indicate the physical form(s) of the new chemical substance (e.g., solid: crystal, granule, powder, or dust) and % new chemical substance (if part of a mixture) at the time of exposure.
(7) -- Mark (X) this column if entries in columns (3) and (5) are confidential business information (CBI).
(8) -- Estimate the maximum number of workers involved in each activity for all sites combined.
(9) -- Mark (X) this column if entry in column (8) is confidential business information (CBI).
(10) and (11) -- Estimate the maximum duration of the activity for any worker in hours per day and days per year.
(12) -- Mark (X) this column if entries in columns (10) and (11) are confidential business information (CBI).

Worker activity (i.e., bag dumping, filling drums) (1)	CBI (2)	Protective Equipment/ Engineering Controls (3)	Binding Option Mark (X) (4)	Physical form(s) & % new substance (5)	Binding Option Mark (X) (6)	CBI (7)	# of Workers Exposed (8)	CBI (9)	Maximum Duration		CBI (12)
									Hrs/Day (10)	Days/Yr (11)	
Loading to mixer (open system) (1)		PPE: safety glasses with side shield, long sleeves, and chemical resistant gloves.		Powder, 100%			3		2	250	
Drying of formulated products (4)		Respiratory facemask. Local Exhaust Ventilation		Bound within products, 5-7%			3		2	250	
Further processing for final products (cutting / grinding etc – generally automated) (5)		Dust mask, gloves		Bound within products, 5-7%			20		4	250	

Mark (X) this box if the data continues on the next page. ☐

Enter Attachment filename for Part II, Section A on the bottom of page 9a. ATTACHMENT 003 ☐

PMN Page 9a

3. Environmental Release and Disposal -- You must make separate confidentiality claims for the release number and the amount of the new chemical substance released and other release and disposal information. Mark (X) the "Confidential" box next to each item you claim as confidential

(1) -- Enter the number of each release point identified in the process description, part II, section A, subsection 1d(3)
(2) -- Estimate the amount of the new substance released (a) directly to the environment or (b) into control technology (in kg/day or kg/batch).
(3) -- Mark (X) this column if entries in columns (1) and (2) are confidential business information (CBI).
(4) -- Identify the media (stack air, fugitive air (optional-see Instruction Manual), surface water, on-site or off-site land or incineration, POTW, or other (specify)) to which the new substance will be released from that release point
(5) -- a. Describe control technology, if any, and control efficiency that will be used to limit the release of the new substance to the environment. For releases disposed of on land, characterize the disposal method and state whether it is approved for disposal of RCRA hazardous waste. On a continuation sheet, for each site describe any additional disposal methods that will be used and whether the waste is subject to secondary or tertiary on-site treatment. b. Estimate the amount released to the environment after control technology (in kg/day).
(6) -- Mark (X) this column if entries in columns (4) and (5) are confidential business information (CBI).
(7) -- Identify the destination(s) of releases to water. Please supply NPDES (National Pollutant Discharge Elimination System) numbers for direct discharges or NPDES numbers of the POTW (Publicly Owned Treatment Works). Mark (X) if the POTW name or NPDES # is confidential business information (CBI).

Release Number	Amount of New Substance Released		CBI	Medium of release e.g. Stack air	Control technology and efficiency (you may wish to optionally attach efficiency data)			CBI
(1)	(2a)	(2b)	(3)	(4)	(5a)	Binding Mark (X)	(5b)	(6)
Chargin g to Mixer /	0	<0.1kg / batch		Other: None	See continuation page. id: <P9ASA3(5a)C1R1>		Negligible.	
Mixing with other	0	<0.1kg / batch		Other: None	See continuation page. id: <P9ASA3(5a)C1R2>		Negligible.	
Extrusio n / Molding	0	<0.1 kg / batch		Other: None	See continuation page. id: <P9ASA3(5a)C1R3>		Negligible.	
Drying (4)	0	<0.001 kg / batch		Stack Air	To air from drying process. Extracted via Local Exhaust Ventilation		Minimal to none.	
Further processi ng for	0	<0 1kg / batch		Other: None	See continuation page. id: <P9ASA3(5a)C1R5>		Negligible.	

Mark (X) this box if the data continues on the next page. ☐

(7) Mark (X) the destination(s) of releases to water.		NPDES#	CBI
☒	POTW--provide name(s)	Not applicable	☐
☒	Navigable waterway- - provide name(s)	Not applicable	☐
☒	Other--Specify	Not applicable	☐

Enter Attachment filename for Part II, Section A. ☐

Continuation Sheet

ID	P9ASA3(5a)C1R1	Field	Part II, Section A, B.(5a) Control Technology & Efficiency, Row 1

Release from cleaning operation of mixing facilities. Contained within the system prior to cleaning process. Packaging waste will contain negligible amounts.

Continuation Sheet

ID	P9ASA3(5a)C1R2	Field	Part II, Section A, B.(5a) Control Technology & Efficiency, Row 2

Release from cleaning operation of facilities. Contained within the system prior to cleaning process.

Continuation Sheet

ID	P9ASA3(5a)C1R3	Field	Part II, Section A, B.(5a) Control Technology & Efficiency, Row 3

Release from cleaning operation of facilities. Contained within the system prior to cleaning process

Continuation Sheet

ID	P9ASA3(5a)C1R5	Field	Part II, Section A, B.(5a) Control Technology & Efficiency, Row 5

Release drained from cleaning operation of mixing facilities. Contained within the system prior to cleaning process

PMN Page 10

Part II-- HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE – Continued

Section B -- INDUSTRIAL SITES CONTROLLED BY OTHERS

The information on pages 10 and 10a refer to consolidated chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Complete section B for typical processing or use operations involving the new chemical substance at sites you do not control. Importers do not have to complete this section for operations outside the U S.; however, you must report any processing or use activities after import See the Instructions Manual *Complete a separate section B for each type of processing, or use operation involving the new chemical substance.* If the same operation is performed at more than one site describe the typical operation common to these sites. Identify additional sites on a continuation sheet.

1(a). Operation Description -- To claim information in this section as confidential, bracket (e.g. {}) the specific information that you claim as confidential.

(1) -- Diagram the major unit operation steps and chemical conversions, including interim storage and transport containers (specify - e.g. 5 gallon pails, 55 gallon drums, rail cars, tank trucks, etc). On the diagram, identify by letter and briefly describe each worker activity.

(2) -- Either in the diagram or in the text field 1(b) below, provide the identity, the approximate weight (by kg/day or kg/batch, on an 100% new chemical substance basis), and entry point of all feedstocks (including reactants, solvents and catalysts, etc) and all products, recycle streams, and wastes. Include cleaning chemicals (note frequency if not used daily or per batch).

(3) -- Either in the diagram or in the text field 1(b) below, identify by number the points of release, including small or intermittent releases, to the environment of the new chemical substance.

(4) -- Please enter the # of sites (remember to identify the locations of these sites on a continuation sheet):

	Number of Sites	0	Confidential ☐

1(b). (Optional) This space is for a text description to clarify the diagram above. Confidential ☐

Please refer to Attachment 3.

Enter Attachment filename for Part II, Section B on the bottom of page 10a.	ATTACHMENT 003 ☐

Continuation Sheet

ID	P10SB1(a)(4)1	Field	Part II, Section B, 1(a)(4). Operation Site Locations

At this time, there are no identified downstream users for the final products containing the substance, as these will be diverse. It is therefore difficult to provide concise information with regards to the end use of the products containing the substance It is therefore considered appropriate to address this as a generic discussion at the time of preparation of this PMN

Please refer to Attachment 3.

PMN Page 10a

2. Worker Exposure/Environmental Release

(1) -- From the diagram above, provide the letter for each worker activity. Complete 2-8 for each worker activity described.
(2) -- Estimate the number of workers exposed for all sites combined.
(4) -- Estimate the typical duration of exposure per worker in (a) hours per day and (b) days per year.
(6) -- Describe physical form of exposure and % new chemical substance (if in mixture), and any protective equipment and engineering controls, if any, used to protect workers
(7) -- Estimate the percent of the new substance as formulated when packaged or used as a final product.
(9) -- From the process diagram above, enter the number of each release point. Complete 9-13 for each release point identified.
(10) -- Estimate the amount of the new substance released (a) directly to the environment or (b) into control technology to the environment (in kg/day or kg/batch).
(12) -- Describe media of release i.e. stack air, fugitive air (optional-see Instructions Manual), surface water, on-site or off-site land or incineration, POTW, or other (specify) and control technology, if any, that will be used to limit the release of the new substance to the environment.
(14) -- Identify byproducts which may result from the operation.
(3), (5), (8), (11), (13) and (15) -- Mark (X) this column if any of the proceeding entries are confidential business information (CBI).

Letter of Activity	# of Workers Exposed	CBI	Duration of Exposure		CBI	Protective Equip./Engineering Controls/Physical Form	% new substance	% in Formulation	CBI
(1)	(2)	(3)	(4a)	(4b)	(5)	(6)	(6)	(7)	(8)
Processing of	10		1	250		See continuation page. id: <P10ASB2(6)C1R1>	1	7	

Release Number	Amount of New Substance Released		CBI	Media of Release & Control Technology	CBI
(9)	(10a)	(10b)	(11)	(12)	(13)
0	Unknown. Predicted negligible based on form of products	Unknown. Predicted negligible based		Unknown. Predicted negligible based on form of products containing the substance within the product matrix.	

Mark (X) this box if the data continues on the next page. ☐

(14) Byproducts: | **(15) CBI** ☐

Enter Attachment filename for Part II, Section B. | ATTACHMENT 003 | ☐

Continuation Sheet

ID	P10ASB2(6)C1R1	Field	Part II, Section B, 2.(6) Protective Equip./Eng. Controls, etc., Row 1

As discussed above, it is difficult to determine the exact exposure patterns, based on use of the products containing the substance In general, standard PPE and controls would be used by the industries conducting further manufacturing exercises with the plastic / foam products containing the PMN substance. Standard industrial practices will mitigate the limited potential for exposure of the PMN substance from the final product.

OPTIONAL POLLUTION PREVENTION INFORMATION

To claim information in the following section as confidential, bracket (e.g. {}) the specific information that you claim as confidential.

In this section you may provide information not reported elsewhere in this form regarding your efforts to reduce or minimize potential risks associated with activities surrounding manufacturing, processing, use and disposal of the PMN substance. Please include new information pertinent to pollution prevention, including source reduction, recycling activities and safer processes or products available due to the new chemical substance. Source reduction includes the reduction in the amount or toxicity of chemical wastes by technological modification, process and procedure modification, product reformulation, and/or raw materials substitution. Recycling refers to the reclamation of useful chemical components from wastes that would otherwise be treated or released as air emissions or water discharges, or land disposal. Quantitative or qualitative descriptions of pollution prevention, source reduction and recycling should emphasize potential risk reduction in addition to compliance with existing regulatory requirements. The EPA is interested in the information to assess overall net reductions in toxicity or environmental releases and exposures, not the shifting of risks to other media (e.g., air to water) or nonenvironmental areas (e g., occupational or consumer exposure) To the extent known, information about the technology being replaced will assist EPA in its relative risk determination. In addition, information on the relative cost or performance characteristics of the PMN substance to potential alternatives may be provided

Describe the expected net benefits, such as

(1) an overall reduction in risk to human health or the environment;
(2) a reduction in the generation of waste materials through recycling, source reduction or other means;
(3) a reduction in the use of hazardous starting materials, reagents, or feedstocks;
(4) a reduction in potential toxicity, human exposure and/or environmental release; or
(5) the extent to which the new chemical substance may be a substitute for an existing substance that poses a greater overall risk to human health or the environment.

Information provided in this section will be taken into consideration during the review of this substance. See PMN Instructions Manual and Pollution Prevention Guidance manual for guidance and examples.

The substance when used as a flame retardant has the advantages of being low cost, halogen free, and offering excellent ignition resistance. The substance is known to retard flame propagation and has been demonstrated to offer good performance with regard to corrosion, smoke formation and the relatively low toxicity of the combustion gases (oxides of carbon and nitrogen). The following benefits are proposed for the substance compared to other flame retardants available at this time:

• The substance is of low proposed toxicity (by comparison with results on analogous substances) compared to other flame retardants currently used in similar processes, e.g. Polybrominated biphenyls (PBBs) and Polybrominated diphenyl ethers (PBDE), currently used commercially in the manufacture of similar products.

• The substance is not currently classified as "hazardous" to either man or the environment under EU legislation.

• This substance is particularly effective in nitrogen containing polymers (polyurethanes, polyamides), because of the synergy with the nitrogen content of the substance

• The predicted (but unmeasured) low water solubility results in greater durability of final products.

• Based on substances of this type, the substance is believed to offer high levels of UV absorption, thus helping protect plastics from damage by sunlight (enhanced durability)

• No environmental issues – the substance contains only nitrogen, carbon and hydrogen, and has low predicted toxicity and environmental effects compared to halogenated flame retardants The substance is understood to degrade finally to ammonia and urea by natural action.

• The substance demonstrates effective improvement of fire safety through multiple effects. (acting as a heat sink; release of inert nitrogen gases to dilute the oxygen and flammable gases; chemically and physically (char formation) inhibits burning; contributes to intumescent coating formation (blows char into a protective foam which prevents dripping).

• It is being used in an increasing range of polymers and applications, including high temperature polymer processing.

• The substance has been assessed under the Restriction of Hazardous Substances Directive (RoHS) 2002/95/EC in the EU for heavy metal content, and has been demonstrated to have negligible amounts of this type of potentially hazardous compounds, as detailed in the supporting information to this PMN. Please refer to Attachment 6.

Based on the above factors, it is proposed that the substance is a more environmentally friendly substitute than current flame retardants currently used commercially in the manufacture of similar products.

Enter Attachment filename for Pollution Prevention Page 11	☐

Part III -- LIST OF ATTACHMENTS

Attach continuation sheets for sections of the form, test data and other data (including physical/chemical properties and structure/activity information), and optional information after this page. Clearly identify the attachment and the section of the form to which it relates, if appropriate. Number consecutively the pages of any paper attachments. In the Number of Pages column below, enter the inclusive page numbers of each attachment for paper submissions or enter the total number of pages for each attachment for electronic submissions. Electronic attachments can be identified by filename.
Mark (X) the "Confidential" box next to any attachment name or filename you claim as confidential. Read the Instructions Manual for guidance on how to claim any information in an attachment as confidential. You must include with the sanitized copy of the notice form a sanitized version of any attachment in which you claim information as confidential.

#	Attachment Name	Attachment Filename	Number of Pages	Associated PMN Section Number	CBI
001	Structure	Delacal 420.jpg	0	Pt I, Sec.B, 1e.	
002	Part II—HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE		3	Pt I, Sec.C, 2b. | Pt.2, Sec.A, 1d. | Pt.2, Sec.A, End	
003	Part II—HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE		1	Pt.2, Sec B, 1a. | Pt.2, Sec.B, End	
004	Assessment of characteristics utilizing EPIWIN v 4 0		12	See continuation page. id: <P12004>	
005	FTIR of the substance.		1		
006	Certificate of analysis for heavy metal content.		1		
007	Cyanide content via Thermal Analysis report.		1		
008	Purity and impurity evaluation.		1	Pt I, Sec.B, 3	
009	EU Format MSDS		2		

Mark (X) this box if the data continues on the next page. ☐

Continuation Sheet

ID	P12004	Field	List of Attachments, Associated PMN Section No., ID: 004

Worksheet: Vapor Pressure | Worksheet: Solubility In Water | Worksheet: Melting temp | Worksheet· Boiling / sublimation temp | Worksheet: Octanol / water partition coefficient | Worksheet: Henrys Law Const | Worksheet: Volitalization from water | Worksheet: Adsorption / Coefficient | Worksheet: Other Property (Biodegradation) | Worksheet: Other Property (Bioconcentration) | Worksheet: Other Property (96-hr LC50 Fish) | Worksheet: Other Property (14-day LC50 Fish) | Worksheet: Other Property (48 hr LC50 - Daphnid) | Worksheet: Other Property (96-hr LC50 Green Algae)

PMN Page 13

PHYSICAL AND CHEMICAL PROPERTIES WORKSHEET

The information on this page refers to chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

To assist EPA's review of physical and chemical properties data, please complete the following worksheet for data you provide and include it in the notice Identify the property measured, the value of the property, the units in which the property is measured (as necessary), and whether or not the property is claimed as confidential. Give the attachment number (found on page 12) in column (b). The physical state of the neat substance should be provided. These measured properties should be for the neat (100% pure) chemical substance. Properties that are measured for mixtures or formulations should be so noted (% PMN substance in __). You are not required to submit this worksheet, however, EPA strongly recommends that you do so, as it will simplify the review and ensure that confidential information is properly protected You should submit this worksheet as a supplement to your submission of test data. This worksheet is not a substitute for submission of test data

Property (a)		Unit	Mark X if Provided	Attachment Number (b)	Value (c)			Measured or Estimate (M or E)	CBI Mark (X) (d)
Physical state of neat substance			☐		(solid) ☒	(liquid) ☐	(gas) ☐	Measured	
Vapor Pressure @ Temperature	20	°C	☒	004	1.97 x 10-9		Torr	Estimate	
Density/relative density			☐				g/cm3		
Solubility									
@ Temperature		°C	☐				g/L		
Solvent									
Solubility in Water @ Temperature	20	°C	☒	004	0.1157		g/L	Estimate	
Melting Temperature			☒	004	199.66		°C	Estimate	
Boiling / Sublimation temperature @	760	Torr	☒	004	472.30		°C	Estimate	
Spectra			☐						
Dissociation constant			☐						
Octanol / water partition coefficient			☒	004	Log Pow 0.07			Estimate	
Henry's Law constant			☒	004	4.25 x 10-13 PaM3/mole			Estimate	
Volatilization from water			☒	004	2.349e+10 years			Estimate	
Volatilization from soil			☐						
pH@ concentration			☐						
Flammability			☐		Not flammable			Estimate	
Explodability			☐		None (based on QSAR)			Estimate	
Adsorption / Coefficient			☒	004	3.3734			Estimate	
Particle Size Distribution			☐						
Other – Specify	Biodegradation		☒	004	Not readily biodegradable			Estimate	

Continuation Sheet

ID		Field	

PHYSICAL AND CHEMICAL PROPERTIES WORKSHEET

Property (a)		Mark X if Provided	Attachment Number (b)	Value (c)	Measured or Estimate (M or E)	CBI Mark (X) (d)
Other – Specify	Bioconcentration	X	004	Log BCF = 0 500	Estimate	
Other – Specify	96-hr LC50 Fish	X	004	317.35 mg/l	Estimate	
Other – Specify	14-day LC50 Fish	X	004	2812.99 mg/l	Estimate	
Other – Specify	48 hr LC50 - Daphnid	X	004	4 99 mg/l	Estimate	
Other – Specify	96-hr LC50 Green Algae	X	004	15.62 mg/l	Estimate	
Other – Specify						
Other – Specify						
Other – Specify						
Other – Specify						
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Other – Specify						
Other – Specify						
Other – Specify						
Other – Specify						
Other – Specify						
Other – Specify						

329674

delamin

DELAMIN LIMITED, 4 ROYAL SCOT ROAD, PRIDE PARK, DERBY, DE24 8AJ, UK
TEL: +44(0)1332 349384 FAX: +44(0)1332 349367 Website: www.delamin.com
E-mail: enquiries@delamin.com sales@delamin.com

Amendment
P10-415
Contain NO CBI
5010000 04022

Office of Pollution Prevention and Toxics
Document Control Office (7407M)
US EPA, 1201 Constitution Ave NW
WASHINGTON, D.C. 20460
U.S.A

Dear Sirs

25.08.10

Ref: Rejected TSCA Amendment ML-42069

We refer to your rejection letter of the 8th August 2010 (enclosed).

Please find enclosed the required amendment request in the required PMN support document module of the e-TSC/e-PMN software.

Yours Faithfully

P. Coates

Director

ML-42069

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

8/9/12

Phil Coates
DELAMIN LIMITED
4 Royal Scot Road Pride Park
Derby, DE24 8AJ,UK

RE: **Rejected** TSCA Amendment

Dear Submitter:

This letter serves to notify you that your company's Amendment has been rejected for the following reasons.

In order to send in an amendment you must go into the link listed below which will generate a new form for an amendment. Using this tool will also give you a new SRN that is to be used to reference your orginial PMN submission.

The reasons(s) for which your Amendment has been **rejected** is listed below:

____ Effective April 6, 2010, the old Premanufacture Notice (EPA Form 7710-25 REV. 5-95) **will no longer be accepted**. The new form is **EPA Form 7710-25 REV. 6-09**. The website for the new form is www.epa.gov/oppt/epmn-index.htm

___The Submission Report Number (SRN) is a requirement. The SRN is generated when the **finalize command**" is used during printing of the e/form. If the finalize command is not used, a **SRN will not print on your form**. There fore it will be incomplete. Please use the finalize command to print a SRN on your submission.

_X_ **Each new submission must have a new SRN number referencing the original submission and put on the new form that the tool will generate. Please reference the TS number as well as the PMN number.**

Records & Dockets Management Branch
Information Management Division
Mail Code 7407M

329674

SUP2010P1

NON-CBI SUBMISSION

Form Approved. O.M.B. No. 2070-0173.

EPA Support Form

Support Form Report Number	SUPP100825577121184	Mark (X) if anything is CBI	☐

I. ORIGINAL NOTICE SUBMISSION IDENTIFICATION

Report Number	DELA100602578127365	TS Number	9BZ9B0	Case Number	P100415
Original Submission Date	10-Jun-2010				
Original Submission Media Type	Paper				

II. ORIGINAL NOTICE SUBMITTER IDENTIFICATION — CBI ☐

Authorized Official Name	(first) Robert	(last) McMillan		
Position	Manager	Company Name	H&M Metal Processing	
Mailing Address (Number & Street)	1850 Front Street			
City	Cuyahoga Falls	State	OH	Postal Code 44222
e-mail	rsmcmillen@aol.com	Telephone (include area code)	330-928-9021	

III. CURRENT SUPPORT DOCUMENT IDENTIFICATION INFORMATION — CBI ☐

Name	(first) Gerry	(last) Myers		
Position	Consultant	Company Name	Consultant	
Mailing Address (Number & Street)	1013 Summerfield Drive			
City	Maryville	State	TN	Postal Code 37801
Province		Country	US	
e-mail	Meyersgfm@aol.com	Telephone (include area code)	865-681-5299	

IV. TYPE OF SUPPORT (Check One)

☐	Letter of Support (Mark the certification statement checkbox below) ☐ All information provided in this Letter of Support is complete and truthful as of the date of the submission.
☐	Withdrawal Request
☐	Other Correspondence
☐	TEST DATA (Health/Eco/Fate)
☒	Amendment (Changes made to PMN pages 1-13, MSDS or Physical/Chemical properties)

Check if requested by EPA/ contractor	☒
EPA person/ contractor	Dr Tom Webb, the Contract Chemist for the EPA; tel (703) 413 - 9370
Submitter Signature	

SUP2010P2

NON-CBI SUBMISSION

V. TEXT / DESCRIPTION OF CHANGES	CBI	☐

DrTom Webb requested the following additional information in support of the PMN information detailed above, on 6 July 2010.

Q) There are several material grades developed during the refining process of the PMN substance. Please confirm these.

Q) A Purity Test was conducted which showed this material to be the only component. Further information on the purity is required.

Q) Is there an error in the CAS designation for the water impurity?

We subsequently replied by letter as requested; however, this was rejected with reference ML-40269. As such, we are therefore replying now via the requested form. Our response to these questions is listed via the attachments listed in support of this amendment support request.

Insert Attachment	

SUP2010P3

NON-CBI SUBMISSION

LIST OF ATTACHMENTS

#	Attachment Name	Attachment Filename	Number of Pages	Associated Section Number	CBI
001	Amendment request response information		3		
002	Standard Operating Procedure (SOP)		2		
003	Specimen thermal gravimetric analysis (TGA)		1		

Mark (X) this box if the data continues on the next page. ☐

NON-CBI SUBMISSION

ATTACHMENT HEADER SHEET

Attachment Number 001

Attachment Name

Amendment request response information

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

SUPP100825577121184

Attn:

Dr Tom Webb
Contract Chemist
Office of Pollution Prevention and Toxics
Document Control Office (7407M)
US EPA, 1200 Pennsylvania Ave NW
WASHINGTON, D.C. 20460

25 August 2010

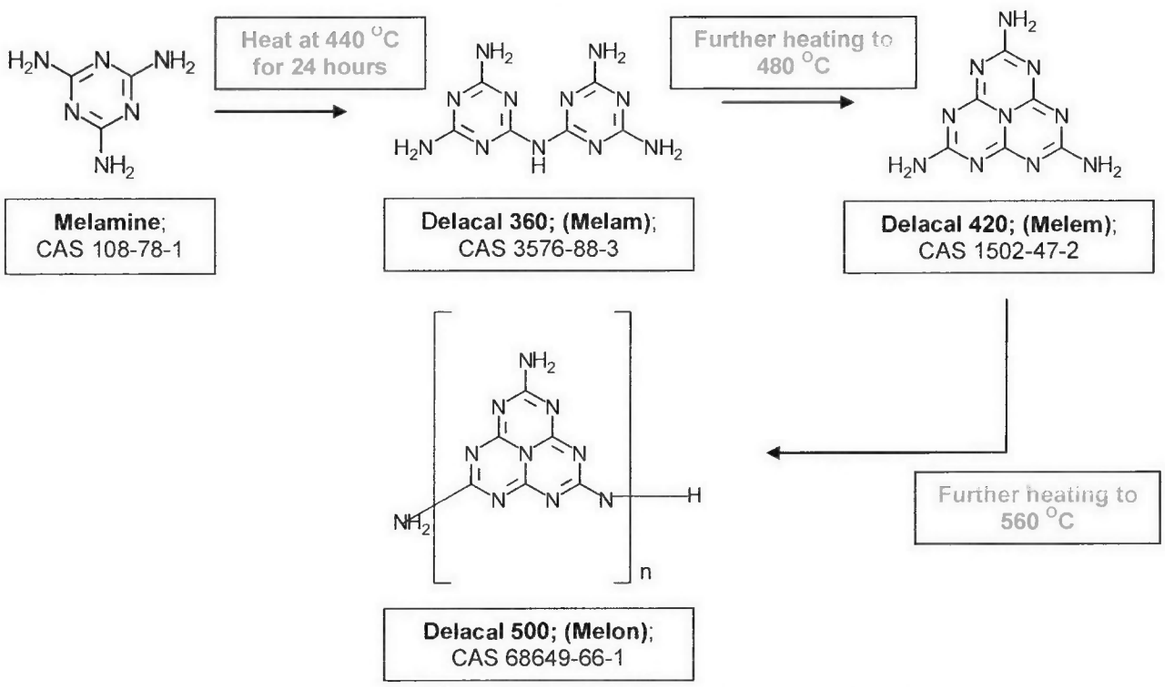
Dear Dr Webb,

RE: PMN Submission Report Number DELA100602578127365 ; request for written amendment.

Further to our conversation on Tuesday 6th July, as you requested I am writing to confirm the scope of our conversation and to formally provide the information requested in support of our recent PMN application, information as detailed above. My understanding of your requirements, and our associated response is as follows:

Q) There are several material grades developed during the refining process of the PMN substance. Please confirm these.

A). This is correct. This particular product range produced by Delamin UK Ltd is manufactured by the thermal condensation treatment of the starting precursor "Melamine" (CAS No: 108-78-1), which results in the range of products used as flame retardants by our organization. Diagrammatically, the process is:



As such, the process involves essentially the condensation of melamine until the desired product is achieved. The above is a simplified version of the reaction process but is provided here for clarity.

Q) A Purity Test was conducted which showed this material to be the only component. Further information on the purity is required.

A) We believe that the purity information to which you refer was that as provided within Appendix 8 to our PMN submission. Essentially, this is the only purity information that we have. However, we believe that this is justifiable, as follows:

1) This range of triazines are known for their insolubility in both water and organic solvents and this is widely published in the public domain. It is actually a key marketing point for these substances (in addition to the obvious environmental advantages), as it allows them to be used in a wide variety of applications including those where significant exposure to environmental conditions may occur. As such, it is very difficult to assess the purity of such compounds in a conventional manner, e.g.. by chromatographic techniques, as it is simply not possible to solvate the substances into media to allow for such an assessment to be undertaken.

Some efforts were made by Delamin UK Ltd using basic techniques at the commencement of manufacture of these substances, in order that we could establish a baseline for the specification for the products. This is the data that was provided within Appendix 8 (we have also made some efforts with regards to establishing heavy metal content; as flame retardants these substances fall under the EU RoHS Directive). As our route of manufacture has not changed since establishing this baseline, it is assumed that the quality tests we perform (see below) provide adequate information on the potential purity of our products, particularly with regards to performance.

2) Quality Control of our products is covered by our ISO 9001 quality management system which dictates the manner in which we establish the grade, quality and purity of our products. Given the insolubility of the products, we have had to utilize an innovative approach to quality control and assessment. This we do by the use **thermal gravimetric analysis** (**TGA**), and I enclose an excerpt Standard Operating Procedure (SOP) from our QMS that dictates the methodology used in assessing our products by this manner. I also enclose a specimen TGA for your information that details a typical trace for our products (See attachement reference 100010084.001 here as the required spectra). We know the TGA requirements for each product, and as such, can determine what we have present as the product by inspecting these traces. These are based on the TGA's as noted following the initial purity determinations, and have historical usage within our company.

Based on these TGA, it can be seen that there is negligible amount of any other product, as this would affect the TGA to an extent that this can be seen.

3) The assumption for our products therefore is that any impurities are driven off during the heating process, hence we believe on a mass balance basis that the TGA assessment is appropriate. Essentially the starting product we use, Melamine, consists of approximately 80% w/w of melamine, with the other 20% consisting of the starting reagents which are Ammonia (aqueous in moisture) and Urea.

As the test material is heated within the manufacturing process, Ammonia (boiling point ca. −33 °C), urea (sublimes) and the water (boiling point ca 100°C) are driven off as gases, and removed from the process via stack extraction. The melamine condenses to form the first phase of the products; this is generally in the form of spherical granules. We understand that a minimal amount of melamine may be contained at the centre of these spherical granules, with the outer "layer" composing of the majority of the required product. This we believe is the reason why melamine is seen as an impurity in later reaction process products; upon the mechanical finishing process of the products, this can potentially be released. Finally the water impurity we believe to be due to condensation from the atmosphere onto the final product; we do not believe that this is present following the reaction process; however it is present in the finished reaction products. As this does not affect the performance of the products we have never taken mechanical measures to minimise this.

Q) Is there an error in the CAS designation for the water impurity?

A) Unfortunately, yes, and we apologise for this. "Heavy" water is not utilized within our reaction process, and as such, we would request that the CAS number is amended to that of "standard" water, i.e. 7732-18-5. We hope that this is acceptable.

We trust that this information is suitable in support of the required amendments.

NON-CBI SUBMISSION

ATTACHMENT HEADER SHEET

Attachment Number 002

Attachment Name

Standard Operating Procedure (SOP)

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

SUPP100825577121184

Standard Operating Procedure

Product: Delacal 420

Manufacturing facility: **********

1.1 Scope

The scope of this SOP outlines the process parameters for the manufacture of Delacal 420, generically known as Melem.

2.1: Condensation Parameters.

The containers with the melamine is placed into the kiln

The kiln is then sealed as necessary.

The heat is applied according to the following ram up parameters.

Time (hours)	Furnace Temp ^{O}C	Material Temp ^{O}C (min)
1	175	47
2	460	330
4	470	370
6	480	410
8	480	420
10	480	420
12	480	450
14	480	450
16	480	460
18	480	480
20	480	480
22	480	480
24	480	480

3.1 Product classification

Samples are to be taken from material once cooled to ambient temp for TGA analysis.
Only approved service providers are to be used.

The TGA parameters for Delacal 420 are as follows:

Temp (°C)	Weight loss (%)	
100	0.05	max
200	1.00	max
300	2.00	max
400	2.75	min

The foregoing is an abstract from Delamin's quality manual titled SOP Melem 480.

This is an uncontrolled copy.

Signed.....R Orgill.....

Name: R.Orgill
Title: Quality Manager
Date 08/01/10

NON-CBI SUBMISSION

ATTACHMENT HEADER SHEET

Attachment Number 003

Attachment Name

Specimen thermal gravimetric analysis (TGA)

Associated PMN Section Number

N/A

Does not contain CBI

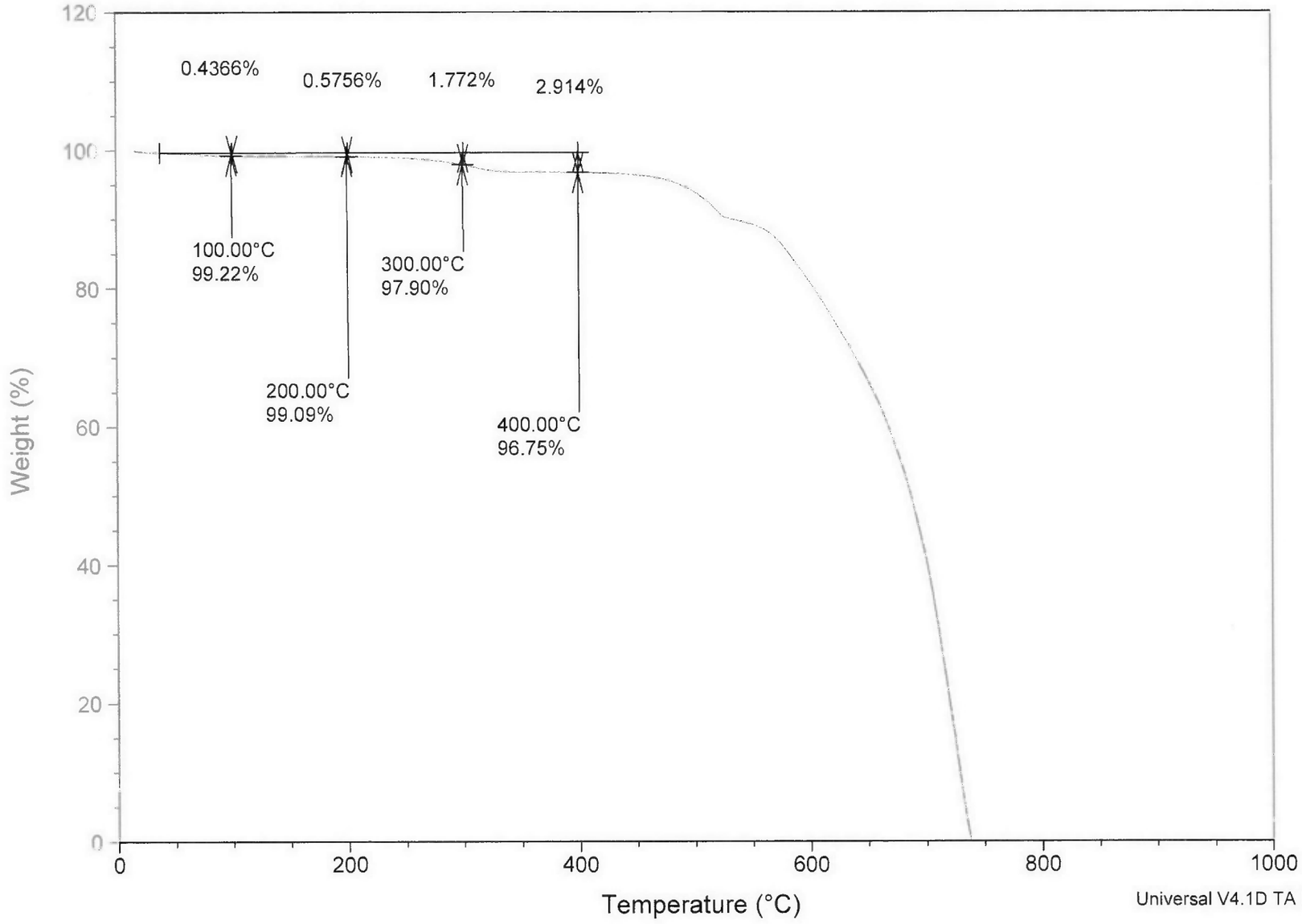
Report Number

SUPP100825577121184

Sample: B1110-420
Size: 10.9617 mg
Method: Ramp
Comment: B1110-420

DSC-TGA

File: C:...\Delamin\June 2010\100010084.001
Operator: EW
Run Date: 09-Jun-2010 07:40
Instrument: 2960 SDT V3.0F



Universal V4.1D TA Instruments

PMN2010P1

CONTAIN NO CBI 327536

NON-CBI SUBMISSION

PMN Page 1

Form Approved. O.M.B. Nos. 2070-0012 and 2070-0038

U.S. ENVIRONMENTAL PROTECTION AGENCY		AGENCY USE ONLY
EPA	PREMANUFACTURE NOTICE FOR NEW CHEMICAL SUBSTANCES	Date of receipt: 10 JUN 10 AM 6:03
		51100000415 P-10-415
When completed, send this form to:	If sending by Courier: Office of Pollution Prevention and Toxics, Document Control Office (7407M), US EPA, 1201 Constitution Ave NW, WASHINGTON, D.C. 20460, Contact Numbers: 202-564-8930/8940 / If sending by US Mail: Office of Pollution Prevention and Toxics, Document Control Office (7407M), US EPA, 1200 Pennsylvania Ave NW, WASHINGTON, D.C. 20460	Submission Report Number: DELA100602578127365

Total Number of Pages	User Fee Payment ID Number	TS Number
58	Cheque number 001045 from Delamin Ltd, UK	9BZ9B0

GENERAL INSTRUCTIONS

- You must provide all information requested in this form to the extent that it is known to or reasonably ascertainable by you. Make reasonable estimates if you do not have actual data.
- Before you complete this form, you should read the "Instructions Manual for Premanufacture Notification" (the Instructions Manual is available from the Toxic Substances Control Act (TSCA) Information Service by calling 202-554-1404, or faxing 202-554-5603).
- If a user fee has been remitted for this notice (40 CFR 700.45), indicate in the boxes above the TS-user fee identification number you have generated. Remember, your user fee ID number must also appear on your corresponding fee remittance. For mailing address information see the Help instructions in the e-PMN tool.

Part I – GENERAL INFORMATION

You must provide the currently correct Chemical Abstracts (CA) Name of the new chemical substance, even if you claim the identity as confidential. You may authorize another person to submit chemical identity information for you, but your submission will not be complete and the review will not begin until EPA receives this information. A letter in support of your submission should reference your TS user fee identification number. For all Section 5 Notice submissions (paper or electronic) you must submit an original notice including all test data; if you claimed any information as confidential, an original sanitized copy must also be submitted.

Part II – HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE

If there are several manufacture, processing, or use operations to be described in Part II, sections A and B of this notice, reproduce the sections as needed.

Part III – LIST OF ATTACHMENTS

For paper submissions, attach additional sheets if there is not enough space to answer a question fully. Label each continuation sheet with the corresponding section heading. In Part III, list these attachments, any test data or other data and any optional information included in the notice.

OPTIONAL INFORMATION

You may include any information that you want EPA to consider in evaluating the new substance. On page 11 of this form, space has been provided for you to describe pollution prevention and recycling information you may have regarding the new substance. "Binding" boxes are included throughout this form for you to indicate your willingness to be bound to certain statements you make in this section, such as use, production volume, protective equipment . . . The intention is to reduce delays that routinely accompany the development of consent orders or Significant New Use Rules. Checking a "binding" box in a PMN does not by itself prohibit the submitter from later deviating from the information (except chemical identity) reported in the form; however, in the case of exemption applications (such as TMEA, LVE, LOREX) certain information provided in such notifications is binding on the submitter when the Agency approves the exemption application, especially if the production volume "binding" box is chosen in a LVE.

CONFIDENTIALITY CLAIMS

You may claim any information in this notice as confidential. To assert a claim on the form, mark (X) the confidential box next to the information that you claim as confidential. To assert a claim in an attachment, circle or bracket the information you claim as confidential. If you claim information in the notices as confidential, you must also provide a sanitized version of the notice, (including attachments). For additional instructions on claiming information as confidential, read the Instructions Manual.

TEST DATA AND OTHER DATA

You are required to submit all test data in your possession or control and to provide a description of all other data known to or reasonably ascertainable by you, if these data are related to the health and environmental effects on the manufacture, processing, distribution in commerce, use, or disposal of the new chemical substance. Standard literature citations may be submitted for data in the open scientific literature. Complete test data (written in English), not summaries of data, must be submitted if they do not appear in the open literature. You should clearly identify whether test data is on the substance or on an analog. Also, the chemical composition of the tested material should be characterized. Following are examples of test data and other data. Data should be submitted according to the requirements of §720.50 of the Premanufacture Notification Rule (40 CFR Part 720).

Test Data (Check Below any included in this notice)

[ ]	Environmental fate data	[X]	Other Data
[ ]	Health effects data	[ ]	Risk Assessments
[ ]	Environmental effects data	[X]	Structure/activity relationships
[X]	Physical/Chemical Properties (A physical and chemical properties worksheet is located on the last page of this form.)		
[ ]	Test data not in the possession or control of the submitter		

TYPE OF NOTICE (Check Only One)

- [X] **PMN** (Premanufacture Notice)
- [ ] **SNUN** (Significant New Use Notice)
- [ ] **TMEA** (Test Marketing Exemption Application)
- [ ] **LVE** (Low Volume Exemption) @ 40 CFR 723.50(c)(1)
- [ ] **LOREX** (Low Release/Low Exposure Exemption) @ 40 CFR 723.50(c)(2)
- [ ] **LVE** Modification
- [ ] **LOREX** Modification
- [ ] **Mock Submission**
- [ ] Mark (X) if pending Letter of Support

___ IS THIS A CONSOLIDATED PMN (Y/N)?

___ # of chemicals or polymers (Prenotice Communication # required, enter # on p. 3).

[ ] Mark (X) if any information in this notice is claimed as confidential.

PMN2010P2

NON-CBI SUBMISSION

PMN Page 2

CERTIFICATION -- A printed copy of this signature page, with original signature, must be submitted with CD or paper submission.

I certify that to the best of my knowledge and belief:

1. The company named in Part I, section A, subsection 1a of this notice form intends to manufacture, import or process for a commercial purpose, other than in small quantities solely for research and development, the substance identified in Part I, Section B.
2. All information provided in this notice is complete and truthful as of the date of submission.
3. I am submitting with this notice all test data in my possession or control and a description of all other data known to or reasonably ascertainable by me as required by §720.50 of the Premanufacture Notification Rule.

Additional Certification Statements:

If you are submitting a PMN, Intermediate PMN, Consolidated PMN, or SNUN, check the following **user fee** certification statement that applies:

- ☐ The Company named in Part I, Section A has remitted the fee of $2500 specified in 40 CFR 700.45(b), or
- ☐ The Company named in Part I, Section A has remitted the fee of $1000 for an Intermediate PMN (defined @ 40 CFR 700.43) in accordance with 40 CFR 700.45(b), or
- ☒ The Company named in Part I Section A is a small business concern under 40 CFR 700.43 and has remitted a fee of $100 in accordance with 40 CFR 700.45(b).

If you are submitting a **Low Volume Exemption (LVE)** application in accordance with 40 CFR 723.50(c)(1) or a **Low Release and Low Exposure Exemption (LoRex)** application in accordance with 40 CFR 723.50(c)(2), check the following certification statements:

- ☐ The manufacturer submitting this notice intends to manufacture or import the new chemical substance for commercial purposes, other than in small quantities solely for research and development, under the terms of 40 CFR 723.50.
- ☐ The manufacturer is familiar with the terms of this section and will comply with those terms; and
- ☐ The new chemical substance for which the notice is submitted meets all applicable exemption conditions.
- ☐ If this application is for an LVE in accordance with 40 CFR 723.50(c)(1), the manufacturer intends to commence manufacture of the exempted substance for commercial purposes within 1 year of the date of the expiration of the 30 day review period.

The accuracy of the statements you make in this notice should reflect your best prediction of the anticipated facts regarding the chemical substance described herein. Any knowing and willful misrepresentation is subject to criminal penalty pursuant to 18 USC 1001.				Confidential
Signature and title of Authorized Official (Original Signature Required)	[signature]	Date	5/26/10	☐

PMN2010P3

NON-CBI SUBMISSION

PMN Page 3

Part I -- GENERAL INFORMATION

Section A – SUBMITTER IDENTIFICATION

Mark (X) the "Confidential" box next to any subsection you claim as confidential

1a.	**Person Submitting Notice (in U.S.)**					Confidential
Name of Authorized Official	(first) Robert			(last) McMillan		
Position	Manager					
Company	H&M Metal Processing					☐
Mailing Address (number & street)	1850 Front Street					
City	Cuyahoga Falls	State	OH	Postal Code	44222	
email	rsmcmillen@aol.com					

b.	**Agent (if Applicable)**					Confidential
Name of Authorized Official	(first) Gerry			(last) Meyers		
Position	Consultant					
Company	None					☐
Mailing Address (number & street)	1013 Summerfield Drive					
City	Maryville	State	TN	Postal Code	37801	
e-mail	Meyersgfm@aol.com		Telephone (include area code)		865-681-5299	

c.	**Joint Submitter (if applicable)**					Confidential
If you are submitting this notice as part of a joint submission, mark (X)					☐	
Name of Authorized Official	(first)			(last)		
Position						
Company						☐
Mailing Address (number & street)						
City		State		Postal Code		
e-mail			Telephone (include area code)			

2.	**Technical Contact (in U.S.)**					Confidenti
Name of Authorized Official	(first) Gerry			(last) Meyers		
Position	Consultant					
Company	None					☐
Mailing Address (number & street)	1013 Summerfield Drive					
City	Maryville	State	TN	Postal Code	37801	
e-mail	Meyersgfm@aol.com		Telephone (include area code)		865-681-5299	

3.	If you have had a prenotice communication (PC) concerning this notice and EPA assigned a PC Number to the notice, enter the number.		Mark (X) if none [X]
4.	If you previously submitted an exemption application for the chemical substance covered by this notice, enter the exemption number assigned by EPA. If you previously submitted a PMN for this substance enter the PMN number assigned by EPA (i.e. withdrawn or incomplete).	ML-41340	Mark (X) if none [ ]
5.	If you have submitted a notice of Bona fide intent to manufacture or import for the chemical substance covered by this notice, enter the notice number assigned by EPA.		Mark (X) if none [X]

6.	**Type of Notice – Mark (X)**						
1.	Manufacture Only ☐ Binding Option ☐	2.	Import Only [X] Binding Option ☐	3.	Both ☐		

PMN2010P4

NON-CBI SUBMISSION

PMN Page 4

Part I – GENERAL INFORMATION -- Continued

Section B – CHEMICAL IDENTITY INFORMATION: You must provide a currently correct Chemical Abstracts (CA) name of the substance based on current CA index nomenclature rules and conventions.

Mark (X) the "Confidential" box next to any item you claim as confidential

Complete either item 1 (Class 1 or 2 substances) or 2 (Polymers) as appropriate. Complete all other items.

If another person will submit chemical identity information for you (for either Item 1 or 2), mark (X) the box at the right. Identify the name, company, and address of that person in a continuation sheet. ☐

1. Class 1 or 2 chemical substances (for definitions of class 1 and class 2 substances, see the Instructions Manual)	Class 1	Class 2	CBI
a. Class of substance - Mark (X)	X	☐	☐

b. Chemical name (Currently correct Chemical Abstracts (CA) Name that is consistent with TSCA Inventory listings for similar substances. For Class 1 substances a CA Index Name must be provided. For Class 2 substances either a CA Index Name or CA Preferred Name must be provided, which ever is appropriate based on current CA index nomenclature rules and conventions). ☐

1,3,4,6,7,9,9b-heptaazaphenalene-2,5,8-triamine

CAS Registry Number (if a number already exists for the substance)	1502-47-2

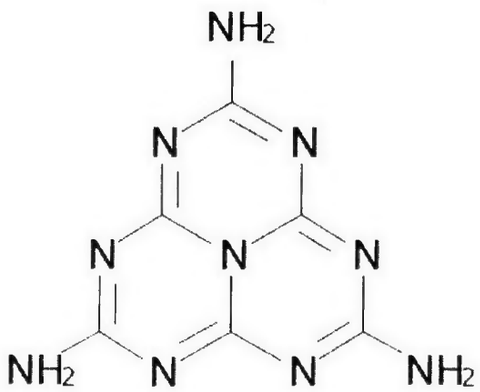
c. Please identify which method you used to develop or obtain the specified chemical identity information reported in this notice: (check one).

Method 1 (CAS Inventory Expert Service - a copy of the Identification report obtained from the CAS Inventory Expert Services must be submitted as an attachment to this notice) ☐	IES Order Number		**Method 2** (Other Source) X

Enter Attachment filename for Part I, Section B, 1. c. ☐

d. Molecular formula: C6H6N10 ☐

e. For a class 1 substance, provide a complete and correct chemical structure diagram. For a class 2 substance, provide a correct representative or partial chemical structure diagram, as complete as can be known, if one can be reasonably ascertained. ☐



Enter Attachment filename for Part I, Section B, 1. e. Delacal 420.jpg ATTACH 001 ☐

PMN2010P4A

NON-CBI SUBMISSION

PMN Page 4a

For a class 2 substance - (1) List the immediate precursor substances with their respective CAS Registry Numbers. (2) Describe the nature of the reaction or process. (3) Indicate the range of composition and the typical composition (where appropriate).	Confidential

e. (1) List the immediate precursor substance names with their respective CAS Registry Numbers. ☐

Not applicable

Enter Attachment filename for Part I, Section B, 1. e. (1)	☐

e. (2) Describe the nature of the reaction or process. ☐

Not applicable

Enter Attachment filename for Part I, Section B, 1. e. (2)	☐

e. (3) Indicate the range of composition and the typical composition (where appropriate). ☐

Not applicable

Enter Attachment filename for Part I, Section B, 1. e. (3)	☐

PMN2010P5

NON-CBI SUBMISSION

PMN Page 5

Part I -- GENERAL INFORMATION – Continued

Section B -- CHEMICAL IDENTITY INFORMATION -- Continued

2. Polymers (For a definition of polymer, see the Instructions Manual.)	Confidential
a. Indicate the number-average weight of the lowest molecular weight composition of the polymer you intend to manufacture. Indicate maximum weight percent of low molecular weight species (not including residual monomers, reactants, or solvents) below 500 and below 1,000 absolute molecular weight of that composition.	☐

Describe the methods of measurement or the basis for your estimates:

GPC ☐	**Other** (Specify Below) ☐	

Specify Other:

(i) lowest number average molecular weight:	(ii) maximum weight % below 500 molecular weight:	(iii) maximum weight % below 1000 molecular weight:

Enter Attachment filename for Part I, Section B, 2. a. ☐

b. You must make separate confidentiality claims for monomer or other reactant identity, composition information, and residual information. Mark (X) the "Confidential" box next to any item you claim as confidential

(1) - Provide the specific chemical name and CAS Registry Number (if a number exists) of each monomer or other reactant used in the manufacture of the polymer.
(2) - Mark (X) this column if entry in column (1) is confidential.
(3) - Indicate the typical weight percent of each monomer or other reactant in the polymer.
(4) - Choose "yes" from drop down menu if you want a monomer or other reactant used at two weight percent or less to be listed as part of the polymer description on the TSCA Chemical Substance Inventory.
(5) - Mark (X) this column if entries in columns (3) and (4) are confidential.
(6) - Indicate the maximum weight percent of each monomer or other reactant that may be present as a residual in the polymer as manufactured for commercial purposes.
(7) - Mark (X) this column if entry in column (6) is confidential.

Monomer or other reactant specific chemical name (1)	CBI (2)	Typical composition (3)	Include in identity (4)	CBI (5)	Max residual (6)	CBI (7)
CAS Registry Number (1)						
CAS Registry Number (1)						
CAS Registry Number (1)						
CAS Registry Number (1)						
CAS Registry Number (1)						

Mark (X) this box if the data continues on the next page. ☐

PMN2010P5A

NON-CBI SUBMISSION

PMN Page 5a

c. Please identify which method you used to develop or obtain the specified chemical identity information reported in this notice (check one).				CBI
Method 1 (CAS Inventory Expert Service - a copy of the identification report obtained from CAS Inventory Expert Service must be submitted as an attachment to this notice) ☐	IES Order Number		**Method 2** (other source) ☐	
Enter Attachment filename for Part I, Section B, 2. c.				☐

d. The currently correct Chemical Abstracts (CA) name for the polymer that is consistent with TSCA Inventory listings for similar polymers.	☐

CAS Registry Number (if a number already exists for the substance)		

e. Provide a correct representative or partial chemical structure diagram, as complete as can be known, if one can be reasonably ascertained.	☐

Enter Attachment filename for Part I, Section B, 2. e.	☐

PMN2010P6

NON-CBI SUBMISSION

PMN Page 6

Part I -- GENERAL INFORMATION -- Continued

Section B -- CHEMICAL IDENTITY INFORMATION -- Continued

3. Impurities
   (a) - Identify each impurity that may be reasonably anticipated to be present in the chemical substance as manufactured for commercial purpose. Provide the CAS Registry Number if available. If there are unidentified impurities, enter "unidentified."
   (b) - Estimate the maximum weight % of each impurity. If there are unidentified impurities, estimate their total weight %.

Impurity (a)	CAS Registry Number (a)	Maximum Percent % (b)	Confi-dential
Melamine	108-78-1	0.5	
Water	7789-20-0	1.5	

Mark (X) this box if the data continues on the next page. ☐

Enter Attachment filename for Part I, Section B, 3. ATTACHMENT 003 ☐

4. Synonyms - Enter any chemical synonyms for the new chemical identified in subsection 1 or 2.
Melem ☐

Enter Attachment filename for Part I, Section B, 4. ☐

5. Trade identification - List trade names for the new chemical substance identified in subsection 1 or 2.
Delacal 420 ☐

Enter Attachment filename for Part I, Section B, 5. ☐

6. Generic chemical name - If you claim chemical identify as confidential, you must provide a generic name for your substance that reveals the specific chemical identity of the new chemical substance to the maximum extent possible. Refer to the TSCA Chemical Substance Inventory, 1985 Edition, Appendix B for guidance on developing generic names.

Not applicable.

Enter Attachment filename for Part I, Section B, 6.

7. Byproducts - Describe any byproducts resulting from the manufacture, processing, use, or disposal of the new chemical substance. Provide the CAS Registry Number if available.

Byproduct (1)	CAS Registry Number (2)	Confi-dential
None		

Mark (X) this box if the data continues on the next page. ☐

PMN2010P7

NON-CBI SUBMISSION

PMN Page 7

Part I -- GENERAL INFORMATION -- Continued

Section C -- PRODUCTION, IMPORT, AND USE INFORMATION:

The information on this page refers to consolidated chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Mark (X) the "Confidential" box next to any item you claim as confidential.

1. **Production volume --** Estimate the **maximum** production volume during the first 12 months of production. Also estimate the maximum production volume for any consecutive 12-month period during the first three years of production. Estimates should be on 100% new chemical substance basis. For a Low Volume Exemption application, if you choose to have your notice reviewed at a lower production volume than 10,000 kg/yr, specify the volume and mark (x) in the binding box. If granted, you are bound to this volume.

Maximum first 12-month production (kg/yr) (100% new chemical substance basis)	Maximum 12-month production (kg/yr) (100% new chemical substance basis)	Confidential	Binding Option Mark (X)
100000	200000	☐	☐

Enter Attachment filename for Part I, Section C, 1. CBI ☐

2. **Use Information --** You must make separate confidentiality claims for the description of the category of use, the percent of production volume devoted to each category, the formulation of the new substance, and other use information. Mark (X) the "Confidential" Box next to any item you claim as confidential.
   a. (1) --Describe each intended category of use of the new chemical substance by function and application.
   (2) --Mark (X) this column if entry column (1) is confidential business information (CBI).
   (3) --Indicate your willingness to have the information provided in column (1) binding.
   (4) --Estimate the percent of total production for the first three years devoted to each category of use.
   (5) --Mark (X) this column if entry in column (4) is confidential business information (CBI).
   (6) --Estimate the percent of the new substance as formulated in mixtures, suspensions, emulsions, solutions, or gels as manufactured for commercial purposes at sites under your control associated with each category of use.
   (7) --Mark (X) this column if entry in column (6) is confidential business information (CBI).
   (8) --Indicate % of product volume expected for the listed "use" sectors. Mark more than one box if appropriate. Mark (X) to indicate your willingness to have the use type provided in (8) binding.
   (9) --Mark (X) this column if entry(ies) in column (8) is (are) confidential business information (CBI).

Category of use (1) (by function and application i.e. a dispersive dye for finishing polyester fibers)	CBI (2)	Binding Option Mark (X) (3)	Production % (4)	CBI (5)	% in Formulation (6)	CBI (7)	% of substance expected per use (8)					CBI (9)
							Site-limited	Consumer*	Industrial	Commercial	Binding Option	
Flame retardant additive for polymeric products (plastics etc)			100		100		0	0	100	0		

* If you have identified a "consumer" use, please provide on a continuation sheet a detailed description of the use(s) of this chemical substance in consumer products. In addition include estimates of the concentration of the new chemical substance as expected in consumer products and describe the chemical reactions by which this substance loses its identity in the consumer product.

Mark (X) this box if the data continues on the next page. ☐

b. Generic use description — If you claim any category of use description in subsection 2a as confidential, enter a generic description of that category. Read the Instruction Manual for examples of generic use descriptions.

See continuation page. id: <P7SC2bC1>

Enter Attachment filename for Part I, Section C, 2. b. ATTACHMENT 002 CBI ☐

3. **Hazard Information --** Include in the notice a copy of reasonable facsimile of any hazard warning statement, label, material safety data sheet, or other information which will be provided to any person who is reasonably likely to be exposed to this substance regarding protective equipment or practices for the safe handing, transport, use, or disposal of the new substance. List in part III hazard information you include.

Binding Option Mark (X)

Mark (X) this box if you attach hazard information. ☒ ☐

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NON-CBI SUBMISSION

Continuation Sheet

ID	P7SC2bC1	Field	Part I, Section C, 2.b. Generic use description

The PMN substance, Delacal 420, is a flame retardant additive used to improve fire safety of flexible polyurethane foams, polyamides (nylons) and thermoplastic polyurethanes. It acts by a combination of effects: in contact with heat it decomposes, acting as a heat sink, and release inert nitrogen gases which dilute the oxygen and flammable gases. It also chemically and physically (char formation) inhibits burning, and contributes to intumescent coating formation (blows char into a protective foam which prevents dripping).

The substance is manufactured outside of the United States in Europe (United Kingdom). The material is imported within 20kg polyethylene lines bags as "neat" powder into the US for direct use as a flame retardant in the manufacture of various plastic and foam products. As such, it is intended to be handled by skilled workforce members only, utilizing the appropriate good industrial hygiene practices and personal protective equipment during use to minimize any potential for exposure to man or the environment.

Standard industrial applications are used for 'blending' or 'compounding' Delacal 420 with other plastic additives such as pigments, stabilizers, etc for extrusion or molding of plastic or foam based products. The substance is proposed to be added as a total of 5 to 7% w/w into such finished products; this will be product dependant but should not exceed this proposed content application. Production waste from such "use" sites is generally removed by licensed waste disposal companies for subsequent incineration, in compliance with the local state regulations.

The PMN substance or the products containing it will never be available to end users or consumers in a form that could allow for exposure to the substance. Following the manufacture of final goods, the PMN substance will be duly bound within the polymeric type matrix of the final product. Therefore, for the purposes of TSCA, the PMN substance will only ever be distributed to customers and consumers in commerce as part of an article, for which there is no envisaged release. At the end of life, such waste articles may be disposed into landfill or according to local state regulation by end users, in compliance with the relevant legislation.

Please refer to Attachments 2 and 3

PMN2010P8

NON-CBI SUBMISSION

PMN Page 8

Part II-- HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE

Section A -- INDUSTRIAL SITES CONTROLLED BY THE SUBMITTER

Mark (X) the "Confidential" box next to any item you claim as confidential

The information on pages 8 and 8a refer to consolidated chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Complete section A for each type of manufacture, processing, or use operation involving the new chemical substance at industrial sites you control. Importers do not have to complete this section for operations outside the U.S.; however, you may still have reporting requirements if there are further industrial processing or use operations after import. You must describe these operations. See instructions manual

1. Operation description

a. Identity -- Enter the identity of the site at which the operation will occur.

Confi-dential

Name	H&M Metal Processing		
Site address (number and street)	1850 Front Street		
City	Cuyahoga Falls	County	
State	OH	ZIP code	44222

If the same operation will occur at more than one site, enter the number of sites. Identify the additional sites on a continuation sheet, and if any of the sites have significantly different production rates or operations, include all the information requested in this section for those sites as attachments. → 1 ☐

Mark (X) this box if the data continues on the next page. ☐

b. Type -- Mark (X) Manufacturing ☐ Processing ☒ Use ☐ ☐

c. Amount and Duration -- Complete 1 or 2 as appropriate

Confi-dential

1. Batch	Maximum kg/batch (100% new chemical substance)	Hours/batch	Batches/year	☐
	100	2	1000	
2. Continuous	Maximum kg/day (100% new chemical substance)	Hours/day	Days/year	☐

d. Process description — Mark (X) to indicate your willingness to have your process description binding. → ☐

(1) Diagram the major unit operation steps and chemical conversions. Include interim storage and transport containers (specify- e.g. 5 gallon pails, 55 gallon drum, rail car, tank truck, etc.).
(2) Provide the identity, the approximate weight (by kg/day or kg/batch on a 100% new chemical substance basis), and entry point of all starting materials and feedstocks (including reactants, solvents, catalysts, etc.), and of all products, recycle streams, and wastes. Include cleaning chemicals (note frequency if not used daily or per batch.).
(3) Identify by number the points of release, including small or intermittent releases, to the environment of the new chemical substance. If releasing to two media at the same step, assign a second release number for the second medium.

☐

Please refer to attachments 2 and 3 respectively for details of operational steps.

PMN2010P8A

NON-CBI SUBMISSION

PMN Page 8a

Diagram of the major unit operation steps.	Confidential ☐

Enter Attachment filename for Part II, Section A, 1. d.	ATTACHMENT 002. ☐

PMN2010P9

NON-CBI SUBMISSION

PMN Page 9

Part II-- HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE -- Continued

Section A -- INDUSTRIAL SITES CONTROLLED BY THE SUBMITTER -- Continued

The information on pages 9 and 9a refer to consolidated chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

2. Occupational Exposure -- You must make separate confidentiality claims for the description of worker activity, physical form of the new chemical substance, number of workers exposed, and duration of activity. Mark (X) the "Confidential" box next to any item you claim as confidential.

(1) -- Describe the activities (i.e. bag dumping, tote filling, unloading drums, sampling, cleaning, etc.) in which workers may be exposed to the substance.
(2) -- Mark (X) this column if entry in column (1) is confidential business information (CBI).
(3) -- Describe any protective equipment and engineering controls used to protect workers.
(4) and (6) -- Indicate your willingness to have the information provided in column (3) or (5) binding.
(5) -- Indicate the physical form(s) of the new chemical substance (e.g., solid: crystal, granule, powder, or dust) and % new chemical substance (if part of a mixture) at the time of exposure.
(7) -- Mark (X) this column if entries in columns (3) and (5) are confidential business information (CBI).
(8) -- Estimate the maximum number of workers involved in each activity for all sites combined.
(9) -- Mark (X) this column if entry in column (8) is confidential business information (CBI).
(10) and (11) -- Estimate the maximum duration of the activity for any worker in hours per day and days per year.
(12) -- Mark (X) this column if entries in columns (10) and (11) are confidential business information (CBI).

Worker activity (i.e., bag dumping, filling drums) (1)	CBI (2)	Protective Equipment/ Engineering Controls (3)	Binding Option Mark (X) (4)	Physical form(s) & % new substance (5)	Binding Option Mark (X) (6)	CBI (7)	# of Workers Exposed (8)	CBI (9)	Maximum Duration		CBI (12)
									Hrs/Day (10)	Days/Yr (11)	
Loading to mixer (open system) (1)		PPE: safety glasses with side shield, long sleeves, and chemical resistant gloves.		Powder, 100%			3		2	250	
Drying of formulated products (4)		Respiratory facemask. Local Exhaust Ventilation		Bound within products, 5-7%			3		2	250	
Further processing for final products (cutting / grinding etc – generally automated) (5)		Dust mask, gloves		Bound within products, 5-7%			20		4	250	

Mark (X) this box if the data continues on the next page. ☐

Enter Attachment filename for Part II, Section A on the bottom of page 9a. ATTACHMENT 003 ☐

PMN2010P9A

NON-CBI SUBMISSION

PMN Page 9a

3. Environmental Release and Disposal -- You must make separate confidentiality claims for the release number and the amount of the new chemical substance released and other release and disposal information. Mark (X) the "Confidential" box next to each item you claim as confidential.

(1) -- Enter the number of each release point identified in the process description, part II, section A, subsection 1d(3).
(2) -- Estimate the amount of the new substance released (a) directly to the environment or (b) into control technology (in kg/day or kg/batch).
(3) -- Mark (X) this column if entries in columns (1) and (2) are confidential business information (CBI).
(4) -- Identify the media (stack air, fugitive air (optional-see Instruction Manual), surface water, on-site or off-site land or incineration, POTW, or other (specify)) to which the new substance will be released from that release point.
(5) -- a. Describe control technology, if any, and control efficiency that will be used to limit the release of the new substance to the environment. For releases disposed of on land, characterize the disposal method and state whether it is approved for disposal of RCRA hazardous waste. On a continuation sheet, for each site describe any additional disposal methods that will be used and whether the waste is subject to secondary or tertiary on-site treatment. b. Estimate the amount released to the environment after control technology (in kg/day).
(6) -- Mark (X) this column if entries in columns (4) and (5) are confidential business information (CBI).
(7) -- Identify the destination(s) of releases to water. Please supply NPDES (National Pollutant Discharge Elimination System) numbers for direct discharges or NPDES numbers of the POTW (Publicly Owned Treatment Works). Mark (X) if the POTW name or NPDES # is confidential business information (CBI).

Release Number	Amount of New Substance Released		CBI	Medium of release e.g. Stack air	Control technology and efficiency (you may wish to optionally attach efficiency data)			CBI
(1)	(2a)	(2b)	(3)	(4)	(5a)	Binding Mark (X)	(5b)	(6)
Chargin g to Mixer /	0	<0.1kg / batch		Other: None	See continuation page. id: <P9ASA3(5a)C1R1>		Negligible.	
Mixing with other	0	<0.1kg / batch		Other: None	See continuation page. id: <P9ASA3(5a)C1R2>		Negligible.	
Extrusio n / Molding	0	<0.1 kg / batch		Other: None	See continuation page. id: <P9ASA3(5a)C1R3>		Negligible.	
Drying (4)	0	<0.001 kg / batch		Stack Air	To air from drying process. Extracted via Local Exhaust Ventilation		Minimal to none.	
Further processi ng for	0	<0.1kg / batch		Other: None	See continuation page. id: <P9ASA3(5a)C1R5>		Negligible.	

Mark (X) this box if the data continues on the next page. ☐

(7) Mark (X) the destination(s) of releases to water.		NPDES#	CBI
☒	POTW--provide name(s)	Not applicable		☐
☒	Navigable waterway- - provide name(s)	Not applicable		☐
☒	Other--Specify	Not applicable		☐
Enter Attachment filename for Part II, Section A.				☐

PMN2010P9A-1

NON-CBI SUBMISSION

Continuation Sheet

ID	P9ASA3(5a)C1R1	Field	Part II, Section A, B.(5a) Control Technology & Efficiency, Row 1

Release from cleaning operation of mixing facilities. Contained within the system prior to cleaning process. Packaging waste will contain negligible amounts.

PMN2010P9A-2

NON-CBI SUBMISSION

Continuation Sheet

ID	P9ASA3(5a)C1R2	Field	Part II, Section A, B.(5a) Control Technology & Efficiency, Row 2

Release from cleaning operation of facilities. Contained within the system prior to cleaning process.

PMN2010P9A-3

NON-CBI SUBMISSION

Continuation Sheet

ID	P9ASA3(5a)C1R3	Field	Part II, Section A, B.(5a) Control Technology & Efficiency, Row 3

Release from cleaning operation of facilities. Contained within the system prior to cleaning process.

PMN2010P9A-4

NON-CBI SUBMISSION

Continuation Sheet

ID	P9ASA3(5a)C1R5	Field	Part II, Section A, B.(5a) Control Technology & Efficiency, Row 5

Release drained from cleaning operation of mixing facilities. Contained within the system prior to cleaning process.

PMN2010P10

NON-CBI SUBMISSION

PMN Page 10

Part II-- HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE – Continued

Section B -- INDUSTRIAL SITES CONTROLLED BY OTHERS

The information on pages 10 and 10a refer to consolidated chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Complete section B for typical processing or use operations involving the new chemical substance at sites you do not control. Importers do not have to complete this section for operations outside the U.S.; however, you must report any processing or use activities after import. See the Instructions Manual. *Complete a separate section B for each type of processing, or use operation involving the new chemical substance.* If the same operation is performed at more than one site describe the typical operation common to these sites. Identify additional sites on a continuation sheet.

1(a). Operation Description -- To claim information in this section as confidential, bracket (e.g. {}) the specific information that you claim as confidential.

(1) -- Diagram the major unit operation steps and chemical conversions, including interim storage and transport containers (specify - e.g. 5 gallon pails, 55 gallon drums, rail cars, tank trucks, etc). On the diagram, identify by letter and briefly describe each worker activity.

(2) -- Either in the diagram or in the text field 1(b) below, provide the identity, the approximate weight (by kg/day or kg/batch, on an 100% new chemical substance basis), and entry point of all feedstocks (including reactants, solvents and catalysts, etc) and all products, recycle streams, and wastes. Include cleaning chemicals (note frequency if not used daily or per batch).

(3) -- Either in the diagram or in the text field 1(b) below, identify by number the points of release, including small or intermittent releases, to the environment of the new chemical substance.

(4) -- Please enter the # of sites (remember to identify the locations of these sites on a continuation sheet):

	Number of Sites	0	Confidential ☐

1(b). (Optional) This space is for a text description to clarify the diagram above. Confidential ☐

Please refer to Attachment 3.

Enter Attachment filename for Part II, Section B on the bottom of page 10a.	ATTACHMENT 003 ☐

PMN2010P10-1

NON-CBI SUBMISSION

Continuation Sheet

ID	P10SB1(a)(4)1	Field	Part II, Section B, 1(a)(4). Operation Site Locations

At this time, there are no identified downstream users for the final products containing the substance, as these will be diverse. It is therefore difficult to provide concise information with regards to the end use of the products containing the substance. It is therefore considered appropriate to address this as a generic discussion at the time of preparation of this PMN

Please refer to Attachment 3.

PMN2010P10A

NON-CBI SUBMISSION

PMN Page 10a

2. Worker Exposure/Environmental Release

(1) -- From the diagram above, provide the letter for each worker activity. Complete 2-8 for each worker activity described.
(2) -- Estimate the number of workers exposed for all sites combined.
(4) -- Estimate the typical duration of exposure per worker in (a) hours per day and (b) days per year.
(6) -- Describe physical form of exposure and % new chemical substance (if in mixture), and any protective equipment and engineering controls, if any, used to protect workers.
(7) -- Estimate the percent of the new substance as formulated when packaged or used as a final product.
(9) -- From the process diagram above, enter the number of each release point. Complete 9-13 for each release point identified.
(10) -- Estimate the amount of the new substance released (a) directly to the environment or (b) into control technology to the environment (in kg/day or kg/batch).
(12) -- Describe media of release i.e. stack air, fugitive air (optional-see Instructions Manual), surface water, on-site or off-site land or incineration, POTW, or other (specify) and control technology, if any, that will be used to limit the release of the new substance to the environment.
(14) -- Identify byproducts which may result from the operation.
(3), (5), (8), (11), (13) and (15) -- Mark (X) this column if any of the proceeding entries are confidential business information (CBI).

Letter of Activity	# of Workers Exposed	CBI	Duration of Exposure		CBI	Protective Equip./Engineering Controls/Physical Form	% new substance	% in Formulation	CBI
(1)	(2)	(3)	(4a)	(4b)	(5)	(6)	(6)	(7)	(8)
Processing of	10		1	250		See continuation page. id: <P10ASB2(6)C1R1>	1	7	

Release Number	Amount of New Substance Released		CBI	Media of Release & Control Technology	CBI
(9)	(10a)	(10b)	(11)	(12)	(13)
0	Unknown. Predicted negligible based on form of products	Unknown. Predicted negligible based		Unknown. Predicted negligible based on form of products containing the substance within the product matrix.	

Mark (X) this box if the data continues on the next page. ☐

(14) Byproducts:

(15) CBI ☐

Enter Attachment filename for Part II, Section B. ATTACHMENT 003 ☐

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NON-CBI SUBMISSION

Continuation Sheet

ID	P10ASB2(6)C1R1	Field	Part II, Section B, 2.(6) Protective Equip./Eng. Controls, etc., Row 1

As discussed above, it is difficult to determine the exact exposure patterns, based on use of the products containing the substance. In general, standard PPE and controls would be used by the industries conducting further manufacturing exercises with the plastic / foam products containing the PMN substance. Standard industrial practices will mitigate the limited potential for exposure of the PMN substance from the final product.

PMN2010P11

NON-CBI SUBMISSION

PMN Page 11

OPTIONAL POLLUTION PREVENTION INFORMATION

To claim information in the following section as confidential, bracket (e.g. {}) the specific information that you claim as confidential.

In this section you may provide information not reported elsewhere in this form regarding your efforts to reduce or minimize potential risks associated with activities surrounding manufacturing, processing, use and disposal of the PMN substance. Please include new information pertinent to pollution prevention, including source reduction, recycling activities and safer processes or products available due to the new chemical substance. Source reduction includes the reduction in the amount or toxicity of chemical wastes by technological modification, process and procedure modification, product reformulation, and/or raw materials substitution. Recycling refers to the reclamation of useful chemical components from wastes that would otherwise be treated or released as air emissions or water discharges, or land disposal. Quantitative or qualitative descriptions of pollution prevention, source reduction and recycling should emphasize potential risk reduction in addition to compliance with existing regulatory requirements. The EPA is interested in the information to assess overall net reductions in toxicity or environmental releases and exposures, not the shifting of risks to other media (e.g., air to water) or nonenvironmental areas (e.g., occupational or consumer exposure). To the extent known, information about the technology being replaced will assist EPA in its relative risk determination. In addition, information on the relative cost or performance characteristics of the PMN substance to potential alternatives may be provided.

Describe the expected net benefits, such as
(1) an overall reduction in risk to human health or the environment;
(2) a reduction in the generation of waste materials through recycling, source reduction or other means;
(3) a reduction in the use of hazardous starting materials, reagents, or feedstocks;
(4) a reduction in potential toxicity, human exposure and/or environmental release; or
(5) the extent to which the new chemical substance may be a substitute for an existing substance that poses a greater overall risk to human health or the environment.

Information provided in this section will be taken into consideration during the review of this substance. See PMN Instructions Manual and Pollution Prevention Guidance manual for guidance and examples.

The substance when used as a flame retardant has the advantages of being low cost, halogen free, and offering excellent ignition resistance. The substance is known to retard flame propagation and has been demonstrated to offer good performance with regard to corrosion, smoke formation and the relatively low toxicity of the combustion gases (oxides of carbon and nitrogen). The following benefits are proposed for the substance compared to other flame retardants available at this time:

• The substance is of low proposed toxicity (by comparison with results on analogous substances) compared to other flame retardants currently used in similar processes, e.g. Polybrominated biphenyls (PBBs) and Polybrominated diphenyl ethers (PBDE), currently used commercially in the manufacture of similar products.

• The substance is not currently classified as "hazardous" to either man or the environment under EU legislation.

• This substance is particularly effective in nitrogen containing polymers (polyurethanes, polyamides), because of the synergy with the nitrogen content of the substance.

• The predicted (but unmeasured) low water solubility results in greater durability of final products.

• Based on substances of this type, the substance is believed to offer high levels of UV absorption, thus helping protect plastics from damage by sunlight (enhanced durability)

• No environmental issues – the substance contains only nitrogen, carbon and hydrogen, and has low predicted toxicity and environmental effects compared to halogenated flame retardants. The substance is understood to degrade finally to ammonia and urea by natural action.

• The substance demonstrates effective improvement of fire safety through multiple effects. (acting as a heat sink; release of inert nitrogen gases to dilute the oxygen and flammable gases; chemically and physically (char formation) inhibits burning; contributes to intumescent coating formation (blows char into a protective foam which prevents dripping).

• It is being used in an increasing range of polymers and applications, including high temperature polymer processing.

• The substance has been assessed under the Restriction of Hazardous Substances Directive (RoHS) 2002/95/EC in the EU for heavy metal content, and has been demonstrated to have negligible amounts of this type of potentially hazardous compounds, as detailed in the supporting information to this PMN. Please refer to Attachment 6.

Based on the above factors, it is proposed that the substance is a more environmentally friendly substitute than current flame retardants currently used commercially in the manufacture of similar products.

Enter Attachment filename for Pollution Prevention Page 11.	☐

PMN2010P12

NON-CBI SUBMISSION

PMN Page 12

Part III -- LIST OF ATTACHMENTS

Attach continuation sheets for sections of the form, test data and other data (including physical/chemical properties and structure/activity information), and optional information after this page. Clearly identify the attachment and the section of the form to which it relates, if appropriate. Number consecutively the pages of any paper attachments. In the Number of Pages column below, enter the inclusive page numbers of each attachment for paper submissions or enter the total number of pages for each attachment for electronic submissions. Electronic attachments can be identified by filename.
Mark (X) the "Confidential" box next to any attachment name or filename you claim as confidential. Read the Instructions Manual for guidance on how to claim any information in an attachment as confidential. You must include with the sanitized copy of the notice form a sanitized version of any attachment in which you claim information as confidential.

#	Attachment Name	Attachment Filename	Number of Pages	Associated PMN Section Number	CBI
001	Structure	Delacal 420.jpg	0	Pt.I, Sec.B, 1e.	
002	Part II—HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE		3	Pt.I, Sec.C, 2b. | Pt.2, Sec.A, 1d. | Pt.2, Sec.A, End	
003	Part II—HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE		1	Pt.2, Sec.B, 1a. | Pt.2, Sec.B, End	
004	Assessment of characteristics utilizing EPIWIN v 4.0		12	See continuation page. id: <P12004>	
005	FTIR of the substance.		1		
006	Certificate of analysis for heavy metal content.		1		
007	Cyanide content via Thermal Analysis report.		1		
008	Purity and impurity evaluation.		1	Pt.I, Sec.B, 3.	
009	EU Format MSDS		2		

Mark (X) this box if the data continues on the next page. ☐

PMN2010P12-1

NON-CBI SUBMISSION

Continuation Sheet

ID	P12004	Field	List of Attachments, Associated PMN Section No., ID: 004

Worksheet: Vapor Pressure | Worksheet: Solubility In Water | Worksheet: Melting temp | Worksheet: Boiling / sublimation temp | Worksheet: Octanol / water partition coefficient | Worksheet: Henrys Law Const | Worksheet: Volitalization from water | Worksheet: Adsorption / Coefficient | Worksheet: Other Property (Biodegradation) | Worksheet: Other Property (Bioconcentration) | Worksheet: Other Property (96-hr LC50 Fish) | Worksheet: Other Property (14-day LC50 Fish) | Worksheet: Other Property (48 hr LC50 - Daphnid) | Worksheet: Other Property (96-hr LC50 Green Algae)

PMN2010P13

NON-CBI SUBMISSION

PMN Page 13

PHYSICAL AND CHEMICAL PROPERTIES WORKSHEET

The information on this page refers to chemical number(s): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

To assist EPA's review of physical and chemical properties data, please complete the following worksheet for data you provide and include it in the notice. Identify the property measured, the value of the property, the units in which the property is measured (as necessary), and whether or not the property is claimed as confidential. Give the attachment number (found on page 12) in column (b). The physical state of the neat substance should be provided. These measured properties should be for the neat (100% pure) chemical substance. Properties that are measured for mixtures or formulations should be so noted (% PMN substance in __). You are not required to submit this worksheet; however, EPA strongly recommends that you do so, as it will simplify the review and ensure that confidential information is properly protected. You should submit this worksheet as a supplement to your submission of test data. This worksheet is not a substitute for submission of test data.

Property (a)		Unit	Mark X if Provided	Attachment Number (b)	Value (c)			Measured or Estimate (M or E)	CBI Mark (X) (d)
Physical state of neat substance			☐		(solid) ☒	(liquid) ☐	(gas) ☐	Measured	
Vapor Pressure @ Temperature	20	°C	☒	004	1.97 x 10-9		Torr	Estimate	
Density/relative density			☐				g/cm3		
Solubility									
@ Temperature		°C	☐				g/L		
Solvent									
Solubility in Water @ Temperature	20	°C	☒	004	0.1157		g/L	Estimate	
Melting Temperature			☒	004	199.66		°C	Estimate	
Boiling / Sublimation temperature @	760	Torr	☒	004	472.30		°C	Estimate	
Spectra			☐						
Dissociation constant			☐						
Octanol / water partition coefficient			☒	004	Log Pow 0.07			Estimate	
Henry's Law constant			☒	004	4.25 x 10-13 PaM3/mole			Estimate	
Volatilization from water			☒	004	2.349e+10 years			Estimate	
Volatilization from soil			☐						
pH@ concentration			☐						
Flammability			☐		Not flammable			Estimate	
Explodability			☐		None (based on QSAR)			Estimate	
Adsorption / Coefficient			☒	004	3.3734			Estimate	
Particle Size Distribution			☐						
Other – Specify	Biodegradation		☒	004	Not readily biodegradable			Estimate	

PMN2010P13-1

NON-CBI SUBMISSION

Continuation Sheet

ID		Field	

PHYSICAL AND CHEMICAL PROPERTIES WORKSHEET

Property (a)		Mark X if Provided	Attachment Number (b)	Value (c)	Measured or Estimate (M or E)	CBI Mark (X) (d)
Other – Specify	Bioconcentration	X	004	Log BCF = 0.500	Estimate	
Other – Specify	96-hr LC50 Fish	X	004	317.35 mg/l	Estimate	
Other – Specify	14-day LC50 Fish	X	004	2812.99 mg/l	Estimate	
Other – Specify	48 hr LC50 - Daphnid	X	004	4.99 mg/l	Estimate	
Other – Specify	96-hr LC50 Green Algae	X	004	15.62 mg/l	Estimate	
Other – Specify						
Other – Specify						
Other – Specify						
Other – Specify						
Other – Specify						
Other – Specify						
Other – Specify						
Other – Specify						
Other – Specify						
Other – Specify						
Other – Specify						

ATTACHMENT HEADER SHEET

Attachment Number 001

Attachment Name

Structure

Associated PMN Section Number

Pt.I, Sec.B, 1e.

Does not contain CBI

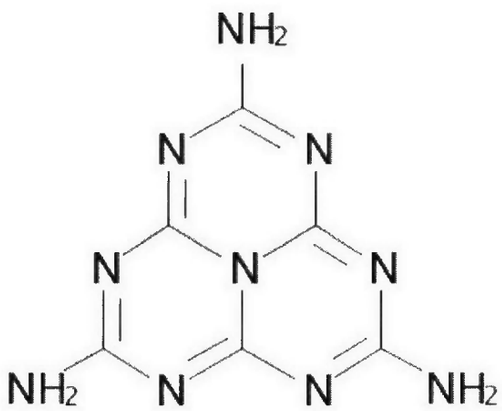
Report Number

DELA100602578127365

Structure of Delacal 420

Chemical Name: 1,3,4,6,7,9,9B-Heptaazaphenalene-2,5,8-triamine

Structure:



Synonyms:

1,3,4,6,7,9,9b-Heptaazaphenalene,2,5,8-triamino- (6CI,7CI,8CI);

2,5,8-Triamino-1,3,4,6,7,9,9b-heptaazaphenalene;

2,6,10-Triamino-s-heptazine;

Cyamelurotriamide;

Delacal 380;

Delacal 450;

Delacal M 350;

Melem

ATTACHMENT HEADER SHEET

Attachment Number 002

Attachment Name

Part II—HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE

Associated PMN Section Number

Pt.I, Sec.C, 2b. | Pt.2, Sec.A, 1d. | Pt.2, Sec.A, End

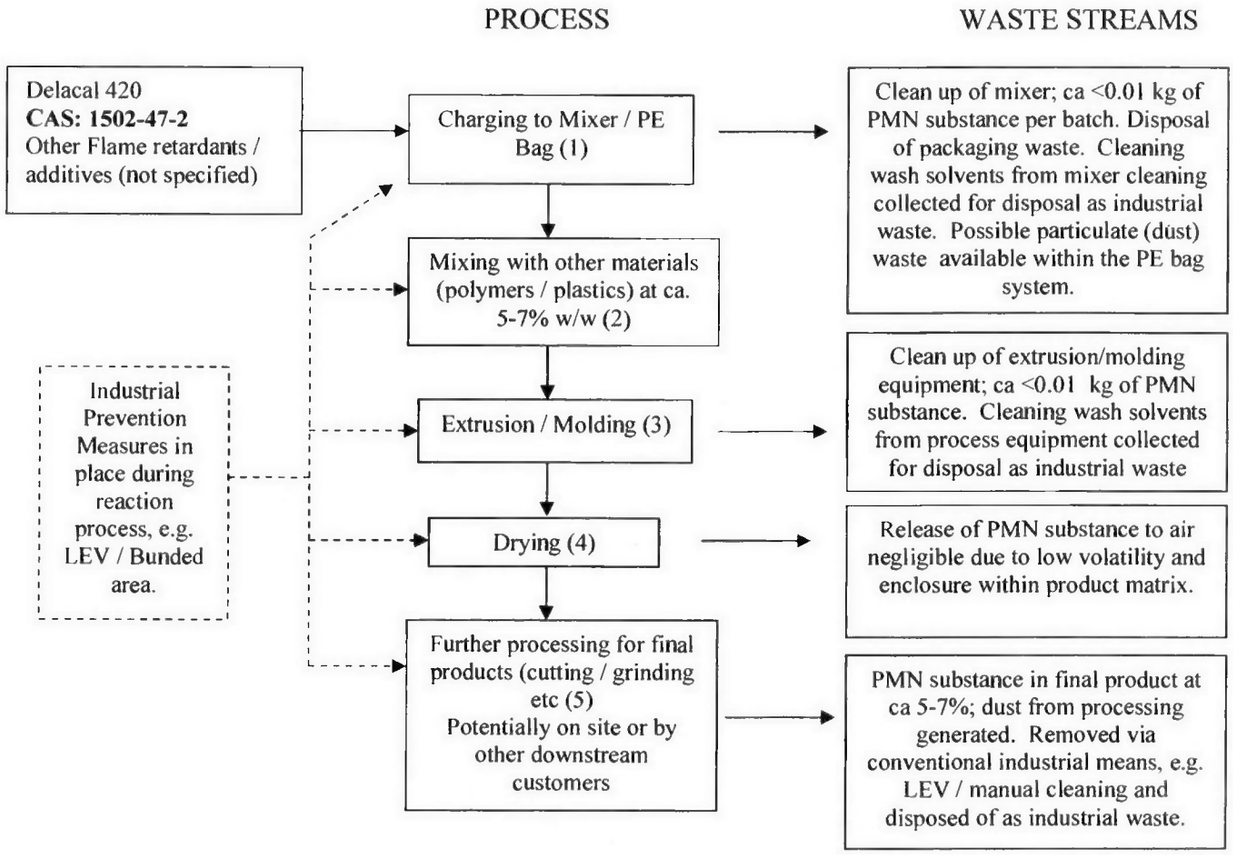
Does not contain CBI

Report Number

DELA100602578127365

Part II—HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE
Section A – INDUSTRIAL SITES CONTROLLED BY THE SUBMITTER

Subsection 1(d) *Process Description*



100% of the PMN substance, Delacal 420, will be imported into the US in the form of a powdered "neat" substance, for use as a flame retardant in the production of polyurethane foams, polyamides (nylons) and thermoplastic polyurethanes. All such imports will be processed within industrial sites. At the site of use, Delacal 420 will be charged directly from the imported 20kg polyethylene lined bags to a mixer or PE bag attachment with other flame retardants for mixing (1). It will then be compounded with other polymers and additives such as antioxidants and colourants (2). The mixture will then pass through an extrusion or molding process via addition to the system via a side feeder (3). The mould or extruded product, in which Delacal 420 will be physically bound, will then be dried (4) at either room temperature or elevated temperatures. The final product will then be subsequently ground, cut etc into the final shape of the product that will be distributed in the marketplace (5); this can take place at either the site of use or at other downstream customer sites. Part of the process will be conducted in closed systems (2) and (3), but information is presented below for handling processes in an open system (typically steps 1 and 5).

Manufacturing of the formulated product containing the PMN substance is anticipated to be at 3 tonnes (3000 kg) production per batch run of product, with the substance incorporated at 7% w/w as a worst case, with approximately 4 batches produced per day. This equates to 12 tonnes product per day as an indication of the batch process. This results in the maximum usage of the substance

each year. It should be noted that this is proposed at the maximum manufacturing scale of the production process, utilizing approximately 200 000 kg of the PMN substance per annum.

Manufacturing equipment in likely to be cleaned down at irregular intervals. Equipment cleaning effluents that may contain small amounts of Delacal 420 would be disposed of in accordance with applicable local, state or federal requirements. If the equipment cleaning effluents are solvent based, then these are recommended to be sent off site for disposal via incineration. Aqueous effluents will be pre-treated via aeration , chemical treatment and microbial treatment prior to release to local POTWs.

The PMN material is not proposed to be acutely toxic or unduly irritant, based on history of use within Europe and analogy with similar products. Furthermore, the material is predicted to be of low volatility, and has a high melting and boiling point so is not anticipated to vaporize. Finally as a flame retardant, it does not pose a flammable hazard, nor based on structure and experience in use is it proposed to have either explosivity or oxidizing concerns.

It is recommended that use of the material should be in compliance with current good industrial hygiene practices; i.e. inform and train all employees on the hazards and risks from the substances with which they work and the use of control measures developed to minimize the risks. Users of the material should ensure that the introduction of control measures does not increase the overall risk to health and safety. It will be recommended to users that the following principles of good industrial practice should be applied:

- Design and operation of processes and activities to minimize emission, release and spread of substances
- Take into account all relevant routes of exposure - inhalation, skin absorption and ingestion when developing control measures.
- Control exposure by measures that are proportionate to the health risk.
- Choose the most effective and reliable control options which minimizes the escape and spread of substances hazardous to health.
- Where adequate control of exposure cannot be achieved by other means, provide, in combination with other control measures, suitable personal protective equipment.
- Check and review regularly all elements of control measures for their continuing effectiveness.
- Waste will be removed by licensed waste disposal companies for subsequent incineration

Exposure within the workplace to the substance is only anticipated during (1) above, i.e. during the charging to the appropriate mixer. Once charged to the extrusion / molding vessel, no further exposure to the workforce from neat substance is anticipated apart from negligible amounts from the cleaning process, as the substance will be incorporated into the polymer matrix of the associated plastic or foam. No occupational exposure limits have been proposed for this substance; therefore as a powdered granular solid, it is considered appropriate to apply the ACGIH Nuisance Dust Limit of 10 mg/m^3 as the substance is not anticipated to be of respirable particle size, based on experience with manufacture and use within Europe and the known physical form as a granular powder.

Suitable ventilation measures should be utilized during (1), and a local exhaust system is recommended for the process operations; this is typically already in use for the type of industry that would use the substance. Should suitable ventilation be unavailable, workers should use an approved respirator, in addition to suitable Personal Protective Equipment, in compliance with local, state and Federal guidelines and regulation.

Further controls should also be in place to avoid direct exposure of the material to the environment. During processes (1), (2) and (3) above, waste liquors could potentially be drained from vessels, and these may be subject to such mitigation steps as aeration, chemical treatment and microbial treatment as appropriate. There is the potential for exposure to the enviroment as a result of the disposal of the packaging that contained the substance; however, it is normally recommended that process wastes of this type be disposed of in an appropriate manner as industrial wastes. It is possible that the substance may be released to the air compartment during the drying process (4), but due to the high boiling point and low volatility of the material this potential release is considered to be negligible.

Significant direct exposure of the PMN substance to the environment is not anticipated. In the event of an unforeseen exposure, results from the calculated biodegradation test demonstrate that the substance will degrade slowly, but is not deemed to be biodegradable, and both experience of the substance and the calculated water solubility demonstrate that the substance is poorly water soluble. The substance could potentially be considered as persistent within the environment. However, the calculated partition coefficient (log Pow) and Bioconcentration Factor (BCF) demonstrate that the potential for this substance to accumulate biologically is negligible. Final degradation products are anticipated to be ammonia and urea; both substances found within the natural environment, and hence unlikely to cause significant effects at the potentially low levels expected from any release. Furthermore, calculated values of toxicity to aquatic organisms indicate that the substance does not display toxic effects to aquatic organisms. Given that the substance is predicted not to bioaccumulate, the low toxicity and the controls recommended to avoid the initial environmental exposure, it is anticipated that environmental effects would be negligible for the intended use of this substance within the United States.

ATTACHMENT HEADER SHEET

Attachment Number 003

Attachment Name

Part II—HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE

Associated PMN Section Number

Pt.2, Sec.B, 1a. | Pt.2, Sec.B, End

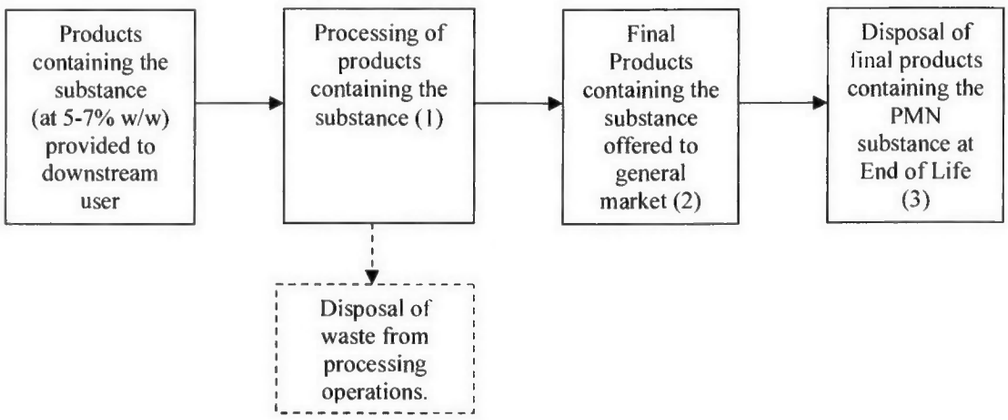
Does not contain CBI

Report Number

DELA100602578127365

Part II—HUMAN EXPOSURE AND ENVIRONMENTAL RELEASE – Continued

Section B -- INDUSTRIAL SITES CONTROLLED BY OTHERS



At this time, there are no identified downstream users for the final products containing the substance, as these will be diverse. It is therefore difficult to provide concise information with regards to the end use of the products containing the substance. It is therefore considered appropriate to address this as a generic discussion at the time of preparation of this PMN.

For processing operations of the products containing the PMN substance as a fire retardant (1), there are likely to be multiple applications, such as molding, cutting, grinding, remelt, fabrication and such associated activities, i.e. the production of articles. As the PMN substance will be bound within the matrix of the products subject to such activities, it is anticipated that significant direct exposure to the substance itself will not occur. As such, exposure considerations would need to be considered for the product as a whole, and not the PMN substance individually. Such exposure considerations are likely to be mitigated by compliance with the relevant national and regional legislation utilised to protect the workforce and environment involved in any manufacturing exercises using the products containing the PMN substance.

The final products (2) offered to the marketplace are not considered to pose any significant risk, in terms of the PMN substance itself. As this will be bound within the matrix of the final product, exposure to both man and the environment will be nil, assuming that such articles that contain the substance are used appropriately.

Disposal of products at the "End of Life" (3) could include the potential for environmental exposure to the substance, following significant processing of the finished article, and/or biodegradation of the article over a period of time. However, there are significant existing legislative rules with regards to the disposal of items within the US, and these will partially mitigate any potential for environmental exposure at the end of life. Such exposure is likely to be disperse in any case.

ATTACHMENT HEADER SHEET

Attachment Number 004

Attachment Name

Assessment of characteristics utilizing EPIWIN v 4.0

Associated PMN Section Number

Worksheet: Vapor Pressure | Worksheet: Solubility In Water | Worksheet: Melting temp | Worksheet: Boiling / sublimation temp | Worksheet: Octanol / water partition coefficient | Worksheet: Henrys Law Const | Worksheet: Volitalization from water | Worksheet: Adsorption / Coefficient | Worksheet: Other Property (Biodegradation) | Worksheet: Other Property (Bioconcentration) | Worksheet: Other Property (96-hr LC50 Fish) | Worksheet: Other Property (14-day LC50 Fish) | Worksheet: Other Property (48 hr LC50 - Daphnid) | Worksheet: Other Property (96-hr LC50 Green Algae)

Does not contain CBI

Report Number

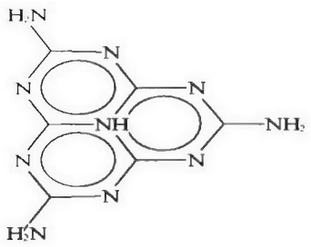
DELA100602578127365

CAS Number:
SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM :
MOL FOR: C6 H6 N10
MOL WT : 218.18

---------- EPI SUMMARY (v4.00) ----------

Physical Property Inputs:

Log Kow (octanol-water):	------
Boiling Point (deg C) :	------
Melting Point (deg C) :	------
Vapor Pressure (mm Hg) :	------
Water Solubility (mg/L):	------
Henry LC (atm-m3/mole) :	------



KOWWIN Program (v1.67) Results:
==========

Log Kow(version 1.67 estimate):

SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM :
MOL FOR: C6 H6 N10
MOL WT : 218.18

TYPE	NUM	LOGKOW FRAGMENT DESCRIPTION	COEFF	VALUE
Frag	6	Aromatic Carbon	0.2940	1.7640
Frag	6	Aromatic Nitrogen	-0.7324	-4.3944
Frag	3	-N [aliphatic N, one aromatic attach]	-0.9170	-2.7510
Frag	1	Aromatic nitrogen [fused ring location]	-0.0001	-0.0001
Factor	3	sym-Triazine ring correction	0.8856	2.6568
Factor	3	Amino triazine/pyrazine/pyrimidine correc.	0.8566	2.5698
Const		Equation Constant		0.2290
			Log Kow =	0.0741

MPBPVP (v1.43) Program Results:
==========
Experimental Database Structure Match: no data

SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM :
MOL FOR: C6 H6 N10
MOL WT : 218.18

---------- SUMMARY MPBVP v1.43 ----------

Boiling Point: 472.30 deg C (Adapted Stein and Brown Method)

Melting Point: 349.84 deg C (Adapted Joback Method)
Melting Point: 162.11 deg C (Gold and Ogle Method)
Mean Melt Pt : 255.98 deg C (Joback; Gold,Ogle Methods)
Selected MP: 199.66 deg C (Weighted Value)

Vapor Pressure Estimations (25 deg C):
(Using BP: 472.30 deg C (estimated))
(Using MP: 199.66 deg C (estimated))
VP: 7.25E-011 mm Hg (Antoine Method)
: 9.66E-009 Pa (Antoine Method)
VP: 1.97E-009 mm Hg (Modified Grain Method)
: 2.62E-007 Pa (Modified Grain Method)
VP: 5.4E-009 mm Hg (Mackay Method)
: 7.2E-007 Pa (Mackay Method)
Selected VP: 1.97E-009 mm Hg (Modified Grain Method)

: 2.62E-007 Pa (Modified Grain Method)
Subcooled liquid VP: 1.37E-007 mm Hg (25 deg C, Mod-Grain method)
: 1.82E-005 Pa (25 deg C, Mod-Grain method)

TYPE	NUM	BOIL DESCRIPTION	COEFF	VALUE
Group	3	-C (aromatic)	30.76	92.28
Group	3	C (3a aromatic)	45.46	136.38
Group	3	-NH2 (to arom)	86.63	259.89
Group	7	N (aromatic)	39.88	279.16
*		Equation Constant		198.18
RESULT-uncorr		BOILING POINT in deg Kelvin		965.89
RESULT- corr		BOILING POINT in deg Kelvin		745.46
		BOILING POINT in deg C		472.30

TYPE	NUM	MELT DESCRIPTION	COEFF	VALUE
Group	3	-C (aromatic)	37.02	111.06
Group	3	C (3a aromatic)	37.02	111.06
Group	3	-NH2 (to arom)	66.89	200.67
Group	7	N (aromatic)	68.40	478.80
*		Equation Constant		122.50
RESULT		MELTING POINT in deg Kelvin		1024.09
RESULT-limit		MELTING POINT in deg Kelvin		623.00
		MELTING POINT in deg C		349.84

Water Sol from Kow (WSKOW v1.41) Results:

Water Sol: 115.7 mg/L

SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM :
MOL FOR: C6 H6 N10
MOL WT : 218.18
---------- WSKOW v1.41 Results ----------
Log Kow (estimated) : 0.07
Log Kow (experimental): not available from database
Log Kow used by Water solubility estimates: 0.07

Equation Used to Make Water Sol estimate:
Log S (mol/L) = 0.796 - 0.854 log Kow - 0.00728 MW + Correction
(used when Melting Point NOT available)

Correction(s):	Value
PAH Type	-1.110
Multi-Nitrogen Type	-1.310

Log Water Solubility (in moles/L) : -3.276
Water Solubility at 25 deg C (mg/L): 115.7

WATERNT Program (v1.01) Results:

Water Sol (v1.01 est): 43.193 mg/L

SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM :
MOL FOR: C6 H6 N10
MOL WT : 218.18

TYPE	NUM	WATER SOLUBILITY FRAGMENT DESCRIPTION	COEFF	VALUE
Frag	1	Aromatic Nitrogen [max count of 1 allowed]	1.9255	1.9255
Frag	6	Aromatic Carbon (C-substituent type)	-0.5400	-3.2397
Frag	1	-N [multi aliphatic N, 1 aromatic attach]	1.7539	1.7539
Frag	1	Aromatic nitrogen [fused ring location]	0.0000	0.0000
Factor	3	Amino triazine/pyrazine/pyrimidine correc.	-1.4641	-4.3923
Const		Equation Constant		0.2492

Log Water Sol (moles/L) at 25 dec C = -3.7034
Water Solubility (mg/L) at 25 dec C = 43.193

ECOSAR Program (v1.00) Results:
==========
SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM :
CAS Num:
ChemID1:
ChemID2:
ChemID3:
MOL FOR: C6 H6 N10
MOL WT : 218.18
Log Kow: 0.07 (KowWin estimate)
Melt Pt:
Wat Sol: 115.7 mg/L (WskowWin estimate)

ECOSAR v1.00 Class(es) Found

Anilines (Aromatic Amines)
Triazines

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Anilines (Aromatic Amines)	Fish	96-hr	LC50	317.352 *
Anilines (Aromatic Amines)	Fish	14-day	LC50	2812.988 *
Anilines (Aromatic Amines)	Daphnid	48-hr	LC50	4.996
Anilines (Aromatic Amines)	Green Algae	96-hr	EC50	15.617
Anilines (Aromatic Amines)	Fish		ChV	2.269
Anilines (Aromatic Amines)	Daphnid		ChV	0.138
Anilines (Aromatic Amines)	Green Algae		ChV	11.039
Triazines	Fish	96-hr	LC50	20637.316 *
Triazines	Daphnid	48-hr	LC50	3011.354 *
Triazines	Green Algae	96-hr	EC50	253.581 *
Triazines	Fish		ChV	709.747 *!
Triazines	Daphnid	21-day	ChV	126.514 *
Triazines	Green Algae		ChV	41.557
Neutral Organic SAR (Baseline Toxicity)	Fish	96-hr	LC50	7164.976 *
	Daphnid	48-hr	LC50	3275.706 *
	Green Algae	96-hr	EC50	640.781 *
	Fish		ChV	709.747 *
	Daphnid		ChV	215.227 *
	Green Algae		ChV	163.149 *

Note: * = asterisk designates: Chemical may not be soluble enough to measure this predicted effect.

Note: ! = exclamation designates: The toxicity value was determined from a predicted SAR using established acute-to-chronic ratios and ECOSAR regression techniques which are documented in the supporting Technical Reference Manual. When possible, this toxicity value should be considered in a weight of evidence approach.

Anilines (Aromatic Amines):

For Fish Acute Toxicity Values: 2,3,5,6-Tetrachloroaniline is 19 times more toxic than predicted by this SAR. Tetrabromoaniline may be more toxic than predicted by this SAR as well.

For Daphnid and Green Algae Toxicity Values: Tetrachloro- and tetrabromaniline may be 20 times toxic than predicted by this SAR.

N-Substituted anilines are less toxic than predicted by these SARs; for these compounds, Neutral Organic SARs are used.

ECOSAR v1.00 SAR Limitations:

Maximum LogKow: >7.8 (Fish 96-hr LC50, Daphnid 48-h LC50)
Maximum LogKow: >3.7 (Fish 14-day LC50)
Maximum LogKow: >4 (Green Algae 96-hr EC50 and ChV)
Maximum LogKow: >4.3 (Fish ChV)
Maximum LogKow: >2.4 (Daphnid ChV)
Maximum Mol Wt: 1000

Triazines:

For Fish and Daphnid Acute Toxicity Values: If the log Kow of the chemical is greater than 5.0, or if the compound is solid and the LC50 exceeds the water solubility by 10X, no effects at saturation are predicted for these endpoints.

For Green Algae Acute Toxicity Values: If the log Kow of the chemical is greater than 6.4, or if the compound is solid and the EC50 exceeds the water solubility by 10X, no effects at saturation are predicted for these endpoints.

For All Chronic Toxicity Values: If the log Kow of the chemical is greater than 8.0, or if the compound is solid and the ChV exceeds the water solubility by 10X, no effects at saturation are predicted for these endpoints.

ECOSAR v1.00 SAR Limitations:

Maximum LogKow: 5.0 (LC50)
Maximum LogKow: 6.4 (EC50)
Maximum LogKow: 8.0 (ChV)
Maximum Mol Wt: 1000

Baseline Toxicity SAR Limitations:

Maximum LogKow: 5.0 (Fish 96-hr LC50; Daphnid LC50)
Maximum LogKow: 6.4 (Green Algae EC50)
Maximum LogKow: 8.0 (ChV)
Maximum Mol Wt: 1000

HENRYWIN (v3.20) Program Results:
==========

Bond Est : 4.20E-018 atm-m3/mole (4.25E-013 Pa-m3/mole)
Group Est: Incomplete

SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM :
MOL FOR: C6 H6 N10
MOL WT : 218.18

---------- HENRYWIN v3.20 Results ----------

CLASS		BOND CONTRIBUTION DESCRIPTION	COMMENT	VALUE
HYDROGEN	6	Hydrogen to Nitrogen Bonds		7.7011
FRAGMENT	15	Car-Nar		24.4233
FRAGMENT	3	Car-N		2.1912
FACTOR	6	Additional aromatic nitrogen(s)		-15.0000
FACTOR	*	Car(Nar)(Nar)(-N<) group		-3.5500
RESULT		BOND ESTIMATION METHOD for LWAPC VALUE	TOTAL	15.766

HENRYs LAW CONSTANT at 25 deg C = 4.20E-018 atm-m3/mole
= 1.72E-016 unitless
= 4.25E-013 Pa-m3/mole

		GROUP CONTRIBUTION DESCRIPTION	COMMENT	VALUE
	3	NH2 (Car)	ESTIMATE	12.00
	7	Nar (Car)(Car)		21.42
		MISSING Value for: Car (Nar)(Nar)(N)		
		MISSING Value for: Car (Nar)(Nar)(Nar)		
		MISSING Value for: Car (N)(Nar)(Nar)		
		MISSING Value for: Car (Nar)(Nar)(Nar)		
		MISSING Value for: Car (N)(Nar)(Nar)		
		MISSING Value for: Car (Nar)(Nar)(Nar)		
RESULT		GROUP ESTIMATION METHOD for LOG GAMMA VALUE	INCOMPLETE	33.42

For Henry LC Comparison Purposes:
Exper Database: none available
User-Entered Henry LC: not entered
Henrys LC [via VP/WSol estimate using User-Entered or Estimated values]:
HLC: 4.888E-012 atm-m3/mole (4.953E-007 Pa-m3/mole)
VP: 1.97E-009 mm Hg (source: MPBPVP)
WS: 116 mg/L (source: WSKOWWIN)

Log Octanol-Air (KOAWIN v1.10) Results:
==========

Log Koa: 15.835

SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM :
MOL FOR: C6 H6 N10
MOL WT : 218.18

---------- KOAWIN v1.10 Results ----------

Log Koa (octanol/air) estimate: 15.835
Koa (octanol/air) estimate: 6.842e+015
Using:
Log Kow: 0.07 (KowWin est)
HenryLC: 4.2e-018 atm-m3/mole (HenryWin est)
Log Kaw: -15.765 (air/water part.coef.)

LogKow : ---- (exp database)

LogKow : 0.07 (KowWin estimate)
Henry LC: --- atm-m3/mole(exp database)
Henry LC: 4.2e-018 atm-m3/mole (HenryWin bond estimate)

Log Koa (octanol/air) estimate: 15.835 (from KowWin/HenryWin)

BIOWIN (v4.10) Program Results:
==========
SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM :
MOL FOR: C6 H6 N10
MOL WT : 218.18
---------- BIOWIN v4.10 Results ----------

Biowin1 (Linear Model Prediction) : Does Not Biodegrade Fast
Biowin2 (Non-Linear Model Prediction): Does Not Biodegrade Fast
Biowin3 (Ultimate Biodegradation Timeframe): Weeks-Months
Biowin4 (Primary Biodegradation Timeframe): Weeks
Biowin5 (MITI Linear Model Prediction) : Does Not Biodegrade Fast
Biowin6 (MITI Non-Linear Model Prediction): Does Not Biodegrade Fast
Biowin7 (Anaerobic Model Prediction): Does Not Biodegrade Fast
Ready Biodegradability Prediction: NO

TYPE	NUM	Biowin1 FRAGMENT DESCRIPTION	COEFF	VALUE
Frag	3	Aromatic amine [-NH2 or -NH-]	-0.2338	-0.7013
MolWt	*	Molecular Weight Parameter		-0.1039
Const	*	Equation Constant		0.7475
RESULT		Biowin1 (Linear Biodeg Probability)		-0.0576

TYPE	NUM	Biowin2 FRAGMENT DESCRIPTION	COEFF	VALUE
Frag	3	Aromatic amine [-NH2 or -NH-]	-1.9070	-5.7210
MolWt	*	Molecular Weight Parameter		-3.0982
RESULT		Biowin2 (Non-Linear Biodeg Probability)		0.0030

A Probability Greater Than or Equal to 0.5 indicates --> Biodegrades Fast
A Probability Less Than 0.5 indicates --> Does NOT Biodegrade Fast

TYPE	NUM	Biowin3 FRAGMENT DESCRIPTION	COEFF	VALUE
Frag	3	Aromatic amine [-NH2 or -NH-]	-0.1349	-0.4048
MolWt	*	Molecular Weight Parameter		-0.4822
Const	*	Equation Constant		3.1992
RESULT		Biowin3 (Survey Model - Ultimate Biodeg)		2.3122

TYPE	NUM	Biowin4 FRAGMENT DESCRIPTION	COEFF	VALUE
Frag	3	Aromatic amine [-NH2 or -NH-]	-0.1084	-0.3251
MolWt	*	Molecular Weight Parameter		-0.3148
Const	*	Equation Constant		3.8477
RESULT		Biowin4 (Survey Model - Primary Biodeg)		3.2078

Result Classification: 5.00 -> hours 4.00 -> days 3.00 -> weeks
(Primary & Ultimate) 2.00 -> months 1.00 -> longer

TYPE	NUM	Biowin5 FRAGMENT DESCRIPTION	COEFF	VALUE
Frag	3	Aromatic amine [-NH2 or -NH-]	-0.1577	-0.4731
MolWt	*	Molecular Weight Parameter		-0.6491
Const	*	Equation Constant		0.7121
RESULT		Biowin5 (MITI Linear Biodeg Probability)		-0.4100

TYPE	NUM	Biowin6 FRAGMENT DESCRIPTION	COEFF	VALUE
Frag	3	Aromatic amine [-NH2 or -NH-]	-1.2264	-3.6791
MolWt	*	Molecular Weight Parameter		-6.2986
RESULT		Biowin6 (MITI Non-Linear Biodeg Probability)		0.0006

A Probability Greater Than or Equal to 0.5 indicates --> Readily Degradable
A Probability Less Than 0.5 indicates --> NOT Readily Degradable

TYPE	NUM	Biowin7 FRAGMENT DESCRIPTION	COEFF	VALUE
Frag	3	Aromatic amine [-NH2 or -NH-]	-0.2778	-0.8335
Const	*	Equation Constant		0.8361
RESULT		Biowin7 (Anaerobic Linear Biodeg Prob)		0.0026

A Probability Greater Than or Equal to 0.5 indicates --> Biodegrades Fast
A Probability Less Than 0.5 indicates --> Does NOT Biodegrade Fast

Ready Biodegradability Prediction: (YES or NO)

Criteria for the YES or NO prediction: If the Biowin3 (ultimate survey model) result is "weeks" or faster (i.e. "days", "days to weeks", or "weeks" AND the Biowin5 (MITI linear model) probability is >= 0.5, then the prediction is YES (readily biodegradable). If this condition is not satisfied, the prediction is NO (not readily biodegradable). This method is based on application of Bayesian analysis to ready biodegradation data (see Help). Biowin5 and 6 also predict ready biodegradability, but for degradation in the OECD301C test only; using data from the Chemicals Evaluation and Research Institute Japan (CERIJ) database.

BioHCwin (v1.01) Program Results:

SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM :
MOL FOR: C6 H6 N10
MOL WT : 218.18

BioHCwin v1.01 Results

NO Estimate Possible ... Structure NOT a Hydrocarbon
(Contains atoms other than C, H or S (-S-))

```
AEROWIN Program (v1.00) Results:
================================
 Sorption to aerosols (25 Dec C)[AEROWIN v1.00]:
  Vapor pressure (liquid/subcooled):  1.83E-005 Pa (1.37E-007 mm Hg)
  Log Koa (Koawin est  ): 15.835
   Kp (particle/gas partition coef. (m3/ug)):
       Mackay model           :  0.164
       Octanol/air (Koa) model:  1.68E+003
   Fraction sorbed to airborne particulates (phi):
       Junge-Pankow model     :  0.856
       Mackay model           :  0.929
       Octanol/air (Koa) model:  1


AOP Program (v1.92) Results:
============================
SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM   :
MOL FOR: C6 H6 N10
MOL WT : 218.18
------------------- SUMMARY (AOP v1.92): HYDROXYL RADICALS (25 deg C) --------
Hydrogen Abstraction       =   0.0000 E-12 cm3/molecule-sec
Reaction with N, S and -OH =   0.0000 E-12 cm3/molecule-sec
Addition to Triple Bonds   =   0.0000 E-12 cm3/molecule-sec
Addition to Olefinic Bonds =   0.0000 E-12 cm3/molecule-sec
Addition to Aromatic Rings =   0.0000 E-12 cm3/molecule-sec
**Addition to Fused Rings    = 200.0000 E-12 cm3/molecule-sec

   OVERALL OH Rate Constant = 200.0000 E-12 cm3/molecule-sec
   HALF-LIFE =     0.053 Days (12-hr day; 1.5E6 OH/cm3)
   HALF-LIFE =     0.642 Hrs
.......................  ** Designates Estimation(s) Using ASSUMED Value(s)
------------------- SUMMARY (AOP v1.91): OZONE REACTION (25 deg C) -----------

              ******  NO OZONE REACTION ESTIMATION ******
              (ONLY Olefins and Acetylenes are Estimated)

Experimental Database:  NO Structure Matches
Fraction sorbed to airborne particulates (phi):
  0.893 (Junge-Pankow, Mackay avg)
  1 (Koa method)
     Note: the sorbed fraction may be resistant to atmospheric oxidation



KOCWIN Program (v2.00) Results:
===============================
SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM   :
MOL FOR: C6 H6 N10
MOL WT : 218.18
--------------------------  KOCWIN v2.00 Results  ---------------------------

  Koc Estimate from MCI:
  ----------------------
        First Order Molecular Connectivity Index  ..........  :  7.631
        Non-Corrected Log Koc (0.5213 MCI + 0.60)  ..........  :  4.5779
        Fragment Correction(s):
                *   Multi-Nitrogen aromatic ..............  : -1.2044
        Corrected Log Koc  ..................................  :  3.3734

                          Estimated Koc:  2363  L/kg   <===========

  Koc Estimate from Log Kow:
```

```
-------------------------
        Log Kow  (Kowwin estimate)  ......................... :  0.07
        Non-Corrected Log Koc (0.55313 logKow + 0.9251)  .... :  0.9638
        Fragment Correction(s):
                *   Multi-Nitrogen aromatic ..............  :  0.0729
        Corrected Log Koc  ................................. :  1.0367

                        Estimated Koc:  10.88  L/kg   <===========



HYDROWIN Program (v2.00) Results:
=================================
SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM   :
MOL FOR: C6 H6 N10
MOL WT : 218.18
--------------------------- HYDROWIN v2.00 Results ---------------------------


 Currently, this program can NOT estimate a hydrolysis rate constant for
               the type of chemical structure entered!!

 ONLY Esters, Carbamates, Epoxides, Halomethanes (containing 1-3 halogens),
      Specific Alkyl Halides & Phosphorus Esters can be estimated!!

   When present, various hydrolyzable compound-types will be identified.
  For more information, (Click OVERVIEW in Help  or  see the User's Guide)

             *****   CALCULATION NOT PERFORMED   *****



BCFBAF Program (v3.00) Results:
===============================
SMILES : Nc1nc2nc(N)nc3nc(N)nc(n1)n23
CHEM   :
MOL FOR: C6 H6 N10
MOL WT : 218.18
--------------------------------- BCFBAF v3.00 ---------------------------------
Summary Results:
  Log BCF (regression-based estimate):  0.50  (BCF = 3.16 L/kg wet-wt)
  Biotransformation Half-Life (days) :  2.12e-005  (normalized to 10 g fish)
  Log BAF (Arnot-Gobas upper trophic):  -0.04  (BAF = 0.916 L/kg wet-wt)

Log Kow (experimental):  not available from database
Log Kow used by BCF estimates:  0.07

Equation Used to Make BCF estimate:
   Log BCF = 0.50

      Correction(s):                    Value
       Correction Factors Not Used for Log Kow < 1

   Estimated Log BCF =  0.500  (BCF = 3.162 L/kg wet-wt)

============================================================
Whole Body Primary Biotransformation Rate Estimate for Fish:
============================================================
------+-----+-----------------------------------------+---------+---------
 TYPE | NUM | LOG BIOTRANSFORMATION FRAGMENT DESCRIPTION |  COEFF  |  VALUE
------+-----+-----------------------------------------+---------+---------
 Frag |  3  |  Aromatic amine   [-NH2  or  -NH-]       | -0.2890 | -0.8669
 Frag |  3  |  Number of fused 6-carbon aromatic rings | -0.5779 | -1.7336
 L Kow|  *  |  Log Kow =   0.07 (KowWin estimate)      |  0.3073 |  0.0228
```

MolWt	*	Molecular Weight Parameter		-0.5595
Const	*	Equation Constant		-1.5058
RESULT		LOG Bio Half-Life (days)		-4.6742
RESULT		Bio Half-Life (days)		2.117e-005
NOTE		Bio Half-Life Normalized to 10 g fish at 15 deg C		

Biotransformation Rate Constant:
kM (Rate Constant): 125 /day (10 gram fish) **
kM (Rate Constant): 70.29 /day (100 gram fish) **
kM (Rate Constant): 39.53 /day (1 kg fish) **
kM (Rate Constant): 22.23 /day (10 kg fish) **

** Predicted value exceeds theoretical whole body maximum value.
kM (Rate Constant) of 125 /day is recommended/applied for 10 g fish

Arnot-Gobas BCF & BAF Methods (including biotransformation rate estimates):
Estimated Log BCF (upper trophic) = -0.038 (BCF = 0.9158 L/kg wet-wt)
Estimated Log BAF (upper trophic) = -0.038 (BAF = 0.9158 L/kg wet-wt)
Estimated Log BCF (mid trophic) = -0.019 (BCF = 0.9575 L/kg wet-wt)
Estimated Log BAF (mid trophic) = -0.019 (BAF = 0.9575 L/kg wet-wt)
Estimated Log BCF (lower trophic) = -0.015 (BCF = 0.9666 L/kg wet-wt)
Estimated Log BAF (lower trophic) = -0.015 (BAF = 0.9666 L/kg wet-wt)

Arnot-Gobas BCF & BAF Methods (assuming a biotransformation rate of zero):
Estimated Log BCF (upper trophic) = 0.009 (BCF = 1.02 L/kg wet-wt)
Estimated Log BAF (upper trophic) = 0.009 (BAF = 1.021 L/kg wet-wt)

Volatilization From Water

Chemical Name:

Molecular Weight : 218.18 g/mole
Water Solubility : -----
Vapor Pressure : -----
Henry's Law Constant: 4.2E-018 atm-m3/mole (estimated by Bond SAR Method)

	RIVER	LAKE
Water Depth (meters):	1	1
Wind Velocity (m/sec):	5	0.5
Current Velocity (m/sec):	1	0.05
HALF-LIFE (hours) :	2.059E+014	2.246E+015
HALF-LIFE (days) :	8.579E+012	9.359E+013
HALF-LIFE (years) :	2.349E+010	2.562E+011

STP Fugacity Model: Predicted Fate in a Wastewater Treatment Facility

(using 10000 hr Bio P,A,S)
PROPERTIES OF:

Molecular weight (g/mol)	218.18
Aqueous solubility (mg/l)	0
Vapour pressure (Pa)	0
(atm)	0
(mm Hg)	0
Henry 's law constant (Atm-m3/mol)	4.2E-018
Air-water partition coefficient	1.71768E-016
Octanol-water partition coefficient (Kow)	1.1749

Log Kow			0.07
Biomass to water partition coefficient			1.03498
Temperature [deg C]			25
Biodeg rate constants (h^-1),half life in biomass (h) and in 2000 mg/L MLSS (h):			
-Primary tank	0.03	20.66	10000.00
-Aeration tank	0.03	20.66	10000.00
-Settling tank	0.03	20.66	10000.00

STP Overall Chemical Mass Balance:

	g/h	mol/h	percent
Influent	1.00E+001	4.6E-002	100.00
Primary sludge	2.52E-002	1.2E-004	0.25
Waste sludge	1.51E-001	6.9E-004	1.51
Primary volatilization	2.29E-015	1.0E-017	0.00
Settling volatilization	6.24E-015	2.9E-017	0.00
Aeration off gas	1.54E-014	7.0E-017	0.00
Primary biodegradation	1.76E-003	8.1E-006	0.02
Settling biodegradation	5.27E-004	2.4E-006	0.01
Aeration biodegradation	6.94E-003	3.2E-005	0.07
Final water effluent	9.81E+000	4.5E-002	98.15
Total removal	1.85E-001	8.5E-004	1.85
Total biodegradation	9.22E-003	4.2E-005	0.09

Level III Fugacity Model (Full-Output):

Chem Name :
Molecular Wt: 218.18
Henry's LC : 4.2e-018 atm-m3/mole (Henrywin program)
Vapor Press : 1.97e-009 mm Hg (Mpbpwin program)
Liquid VP : 1.05e-007 mm Hg (super-cooled)
Melting Pt : 200 deg C (Mpbpwin program)
Log Kow : 0.07 (Kowwin program)
Soil Koc : 2.36e+003 (KOCWIN MCI method)

	Mass Amount (percent)	Half-Life (hr)	Emissions (kg/hr)
Air	2.94e-010	1.28	1000
Water	11.2	900	1000
Soil	87.2	1.8e+003	1000
Sediment	1.51	8.1e+003	0

	Fugacity (atm)	Reaction (kg/hr)	Advection (kg/hr)	Reaction (percent)	Advection (percent)
Air	1.93e-021	8.87e-006	1.64e-007	2.96e-007	5.48e-009
Water	6.03e-023	484	629	16.1	21
Soil	9.15e-023	1.88e+003	0	62.6	0
Sediment	7.04e-023	7.23	1.69	0.241	0.0563

Persistence Time: 1.86e+003 hr
Reaction Time: 2.36e+003 hr
Advection Time: 8.87e+003 hr
Percent Reacted: 79
Percent Advected: 21

Half-Lives (hr), (based upon Biowin (Ultimate) and Aopwin):
Air: 1.284
Water: 900
Soil: 1800
Sediment: 8100

Biowin estimate: 2.312 (weeks-months)

Advection Times (hr):
Air: 100
Water: 1000
Sediment: 5e+004

ATTACHMENT HEADER SHEET

Attachment Number 005

Attachment Name

FTIR of the substance.

Associated PMN Section Number

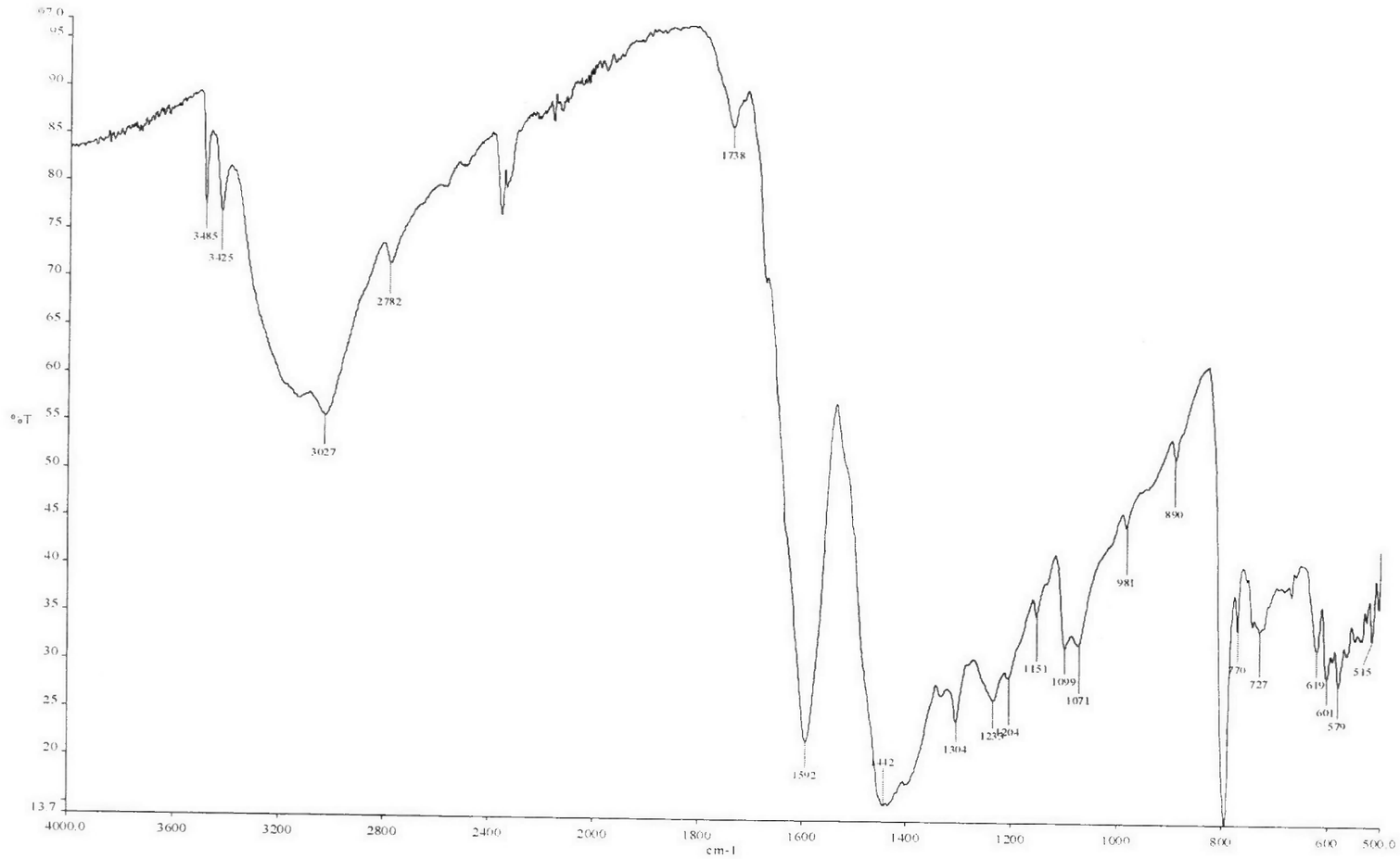
N/A

Does not contain CBI

Report Number

DELA100602578127365

ANA/26574.002 **Delacal 420 Ref: 1021**



ATTACHMENT HEADER SHEET

Attachment Number 006

Attachment Name

Certificate of analysis for heavy metal content.

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

DELA100602578127365

LONDON & SCANDINAVIAN METALLURGICAL CO LIMITED

Fullerton Road, Rotherham, South Yorkshire S60 1DL, England

ANALYTICAL SERVICES

Tel 01709-833763

Fax 01709-830391

CERTIFICATE OF ANALYSIS

Page No. 1 of 1

To
Delamin Ltd
St Matthews House
Brick Row
Darley Abbey
Derby
Derbyshire
DE22 1DQ

FAO
Rosie Orgill

Certificate Date	28/11/2008	Certificate No.	Lab Request No.
Date of Receipt	21/11/2008	2806693	2809794
Analysis Start Date	25/11/2008	Your Ref. / Order No.	
Analysis End Date	27/11/2008		

Sample Details

No. of Samples Submitted 1

Analysis Results

2827718
DELACAL 420 18/11/08

Be	<0.5	ppm
Al	287	ppm
Ni	6	ppm
Cu	12	ppm
Zn	38	ppm
As	<10	ppm
Se	<20	ppm
Cd	<1	ppm
Sn	<10	ppm
Sb	<10	ppm
Ba	73	ppm
Hg	<10	ppm
Pb	18	ppm
Cr(VI)	<2	ppm

END OF REPORT

Analysis on 'As Received' Basis

Comments / Remarks

Analysed using in - house documented procedures for

AA ICP-IRIS

Signed

Certificate Signed by

- P. S. Cooper, Laboratory Manager
- P. W. Hurditch, Chief Chemist
- B. Morales, Sales Development Manager

ATTACHMENT HEADER SHEET

Attachment Number 007

Attachment Name

Cyanide content via Thermal Analysis report.

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

DELA100602578127365

YOUR PARTNER IN MATERIALS AND TECHNOLOGY

Queens Road Penkhull
Stoke-on-Trent ST4 7LQ
Tel: +44 (0) 1782 764444
Fax: +44 (0) 1782 412331
E-mail: info@ceram.co.uk
http://www.ceram.co.uk

TEST REPORT

DELAMIN LIMITED
ST MATTHEWS HOUSE
BRICK ROW
DARLEY ABBEY
DERBY
DE22 1DQ
FAO : P COATES

REPORT OF TESTS ON MELEM

Your Reference	PRE FIRED SAMPLE 1
Ceram Sample(s)	600016617

Date Reported	13-Sep-00	Order/Job No	NONE
Date Received	31-Aug-00	Date(s) of Test(s)	31-Aug/08-Sep-00

THERMAL ANALYSIS REPORT

A sample of pre-fired melem was fired to 400°C. Evolved gas was collected in sodium hydroxide solution and cyanide was determined on the resultant solution.

The calculated evolved cyanide from the sample gave 80μg/g.

Dr RN White
Authorised Signatory

ATTACHMENT HEADER SHEET

Attachment Number 008

Attachment Name

Purity and impurity evaluation.

Associated PMN Section Number

Pt.I, Sec.B, 3.

Does not contain CBI

Report Number

DELA100602578127365

A.H.ALLEN
& PARTNERS
CONSULTING SERVICES

342 Coleford Road
Sheffield
S9 5PH
Tel: 0114 243 1016
Fax: 0114 244 8432
Email:info@ahallen.co.uk
www.ahallen.co.uk

Report No.1958/00

REPORT on a sample of Material received from N.E. Dodes, Managing Director, Delamin Ltd., St Matthews House, Brick Row, Darley Abbey, Derby., DDE22 1DQ on May 30th 2000.

The sample was submitted in a plastic bag marked

23/5/2000
Reference GBC-2

It was analysed for melem, melamine and moisture with the following results:

Melem	98.5%
Melamine	less than 0.1%
Moisture	1.4%

Note

1) The moisture content was determined by loss in weight at 102°C

2) Melamine and melem were determined by a method based on the principle of melamine being soluble in water and melem being insoluble in water

May 31st 2000

P.N. Clare

Public Analysts & Consulting Scientists
Peter N Clare BSc, PhD, MChemA, CChem, FRSC, **Partner**
Marian J Thomas BA, PhD, MChemA, CChem, MRSC, **Associate**

Occupational Hygiene
David Smith, **Partner**
Andrew Alexander BSc (Hons), MIOSH, **Associate**
Lee Dawson BSc (Hons), **Associate**

Health & Safety
Stephen P May BSc (Hons), Dip H&S, MIOSH, RSP, **Associate**

Humberside Office
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266-290 Wincolmlee
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HU2 0PZ
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www.ahallen.co.uk

ATTACHMENT HEADER SHEET

Attachment Number 009

Attachment Name

EU Format MSDS

Associated PMN Section Number

N/A

Does not contain CBI

Report Number

DELA100602578127365

delamin

Web site: www.delamin.com

Material Safety Data

Section 1: Product and Company Identification

1:1 Trade Name	: Delacal 360,	Delacal 420,	Delacal 500
1:2 Chemical Name	: Melam	Melem	Melon
1:3 Uses	: Flame Retardant		
1:4 Manufacturer/ Supplier	: Delamin Limited, St Matthews House Brick Row Darley Abbey DERBY DE22 1DQ		
1:5 Telephone Number	: 00 44 (1)332 558900		
1:6 Emergency Telephone Number:	: 00 44 (1)332 558900		
1:7 Facsimile Number	: 00 44 (1)332 553911		
1.8 Email Contact	: Mark Dodes on mdodes@delamin.com		

Section 2: Hazard Identification

2:1Main Hazards: : The product contains no substances classified as being a hazard to health.

Section 3: Component Information

3:1 Name s	: Melam	Melem	Melon
3:2 CAS	: 3576 - 88 - 3	1502-47-2	68649-66-1
3:3 EINECS	: 222- 695-1	216-122-4	272-034-6
3:4 Chemical Formulation	: $C_6H_9N_{11}$	$C_6H_6N_{10}$	Not Specified

Section 4: First Aid

4:1 Inhalation	: Move to fresh air
4:2 Respiratory Protection	: At dust creation wear a dust mask
4:3 Effects on Ingestion	: No special hazard. Drink plenty of water.
4:4 Contact with Skin	: Wash thoroughly with soap & water
4:5 Contact with eyes	: Wash out eye with plenty of water. If irritation persists, consult a specialist

Section 5: Fire Fighting Measures & Explosion Data

5:1 Extinguishing Media(packing material)	: Water, foam or dry chemical. The product itself does not burn.
5:1 Flash point	: Not applicable Non Flammable
5:2 Ignition point	: Not applicable Non Flammable
5:3 Explosion Hazard	: Not classified as an explosion hazard

Section 6: Accidental Spillage Measures

6:1 Spillage removal method	: Remove by industrial vacuum cleaner
6:2 Waste Disposal	: Dispose as non-toxic waste
6:3 Personal Precautions	: See section 8

Section 7: Handling & Storage

7:1Handling	: Do not eat or drink while product is being handled. Work in ventilated space. Avoid eye or skin contact
7:2 Storage	: Keep containers airtight. Material is hygroscopic.

delamin

Web site: www.delamin.com

Section 8: Exposure Controls / Personal Protection

8:1Threshold values	: UK EH40: OES 2mg/m^3 8h TWA
8:2 Eye Protection	: Wear Safety Glasses
8:3 Body Protection	: Wear overall or apron
8:4 Hygiene Measures	: Adopt good industrial hygiene practice

Section 9: Physical & Chemical Properties.

9:1 Appearance	: Fine yellow powder
9:2 Odour	: None
9:3 pH	: 5-6
9:4 Water solubility	: 0.0014g/l

Section 10: Stability & Reactivity

10:1 Stability	: Delacal 360 stable to 360 °C Delacal 420 stable to 420 °C Delacal 500 stable to 500 °C
10:2 Conditions to avoid	: None
10:3 Hazardous Reactions	: None
10:4 Flammability	: Incombustable

Section 11: Toxicological Information

11:1Acute Toxicity	: None Known. Melem is not listed as a hazardous or noxious substance
11:2 Chronic effects	: None known

Section 12: Ecological Information

12:1 Mobility	: Insoluble in water
12:2 Degradation	: Environmental degradation very slow.
12:3 WGK	: Weakly water polluting.

Section 13: Disposal

13:1 Product Disposal	: In accordance with all applicable local & national regulations
13:2 Container Disposal	: In accordance with all applicable local & national regulations

Section 14:Transport Information

14:1 Classifiaction	: Not classified as hazardous for transport.

Section 15: Regulatory Information

15:1 EU Classification	:67/548/EEC & 88/548/EEC Not classified as hazardous for supply according to EU directives
15:2 R-Phrase(s)	: None
15:3 S-Phrase(s)	: None

Section 16:Other Information

16:1Issue date	: 1st Oct 2007
16:2 Author	: P.Coates
16:3 Compiled in accordance with	: Directive 2001/58/EC 27 July 2001 Switzerland - BAGT Europe/EG - EINECS U.S.A - TSCA Japan - MITI Australia - AICS Canada - CEPA DSL

The information contained in this document is based on data obtained from reliable sources and experience within our company. We believe this information to be correct but cannot guarantee it's accuracy or completeness and no warranty is expressed by this. Users are advised that this information relates only to the specific material designated and is not valid for such material used in combination with any other materials or any process.

Focus Report

New Chemicals Program

PMN Number: **P-10-0415**

Focus Date:	07/11/2010 11:00:00 PM	Report Status:	Completed
Consolidated Set:			
Focus Chair:	Audrey Binder	Contractor:	Paul Sohi

I. Notice Information

Submitter:	H&M Metal Processing	CAS Number:	1502-47-2
Chemical Name:	1,3,4,6,7,9,9b-Heptaazaphenalene-2,5,8-triamine		
Use:	Flame retardant product for polymeric products (plastics, etc.). It acts by a combination of effects: in contact with heat it decomposes, acting as a heat sink, and releases inert nitrogen gases which dilute the oxygen and flammable gases. It also chemically and physically (char formation) inhibits burning, and contributes to intumnescent coating formation (blows char into a protective foam which prevents dripping). CA 152:548956 - Fireproofing agent. CA 152:145887 - To improve fire resistance [redacted] is used as a flame retardant in plastic resins.		
Other Uses:	CA 152:442045 - Component of catalyst. CA 152:315148, 152:315147 - Component of nitrating agent for propellants and gas generators..		
PV-Max:	200,000 Kg/yr		
Manufacture:		Import:	X

II. SAT Results

(1) **Health Rating:** 1-2 **Eco Rating:** 1 **Comments:** ;

Occupational: 2-3B **Non-Occupational:** **Environmental:** 3

(1) **PBT:** 3 1 2 **Comments:**

III. OTHER FACTORS

Categories:

Health Chemical Category: Ecotox Category: neutral organic chemicals

Related Cases/Regulatory History:

Health related Cases:

Ecotox Related Cases: Analog: [redacted]

Regulatory History: NRC

MSDS/Label Information:

MSDS:	Yes	Label:	No
General Equipment:	wear safety glasses/ wear overall or apron/ adopt good industrial hygiene practice/ work in ventilated space		
Respirator:	no respirator recommendation in MSDS		
Health Effects:	avoid eye or skin contact/ the product contains no substances classified as being a hazard to health		
TLV/PEL (PMN or raw material):	- Melam - 8 hour TWA - UK EH40		

Exposure Based Information:

Exposure Based Review:	Y	Exposure Based Review (Health):	Y
Exposure Based Review (Eco):	N	Exposure Based (Occupational):	No
Exposure Based Review (Non Occupatuional):	N	Exposure Based (Environmental):	Y

Exposure Parameter	Exposure-Based	Persistent/Bioaccum	Exposure Value
Surface DW:	Yes	Yes	
Fish Ingestion:			
Ground DW:	Yes		0.38

Inhalation:		0.00229
Water Releases:	Yes	0.33
Total Releases:	Yes	4768
Consumer Exposure:		4935.167

IV. Summary of SAT Assessment

Fate:

Fate Summary:

P-10-0415
FATE:
Solid with MP = 200 C (E)
log Kow = 0.07 (E)
S = 116 mg/L at 25 C (E)
VP < 1.0E-6 torr at 25 C (E)
BP > 400 C (E)
H < 1.00E-8 (E)
log Koc = 3.37 (E)
log Fish BCF = 0.50 (E)
log Fish BAF = -0.04 (E)
POTW removal (%) = 0-50 via sorption
Time for complete ultimate aerobic biodeg ≥ mo
Sorption to soils/sediments = moderate
PBT Potential: P3B1
*CEB FATE: Migration to ground water = moderate

Health:

Health Summary:

Absorption is nil through the skin as the neat material, moderate through the skin when in solution, and good through the lungs and GI tract based on physical/chemical properties. Concerns by anology to melamine are neurotoxicity (convulsions induced by touch in rats in an acute study, LD50 = 4498 mg/kg (8e-[redacted]); uncertain concern for oncogenicity and effects on the kidney at high doses (NTP TR-245); mutagenicity; and developmental toxicity. Low moderate concern.

Ecotox:

Ecotox Values:

Fish 96-h LC50:	>100(P)
Daphnid 48-h LC50:	>100(P)
Green algal 96-h EC50:	>100(P)
Fish Chronic Value:	>10(P)
Daphnid ChV:	>10(P)
Algal ChV:	>10(P)

Ecotox values comments:

Predictions are based on SARs for neutral organic chemicals; SAR chemical class = melamine; MW 218; log Kow = -1.22 (EPI); solid (P); S = 116 mg/L (P); pH7; effective concentrations based on 100% active ingredients and mean measured concentrations; hardness <150.0 mg/L as CaCO3; and TOC <2.0 mg/L;

Ecotox Factors:

Assessment Factor:	10
Concern Concentration:	1000

V. Summary of Exposures/Releases

Engineering Summary: P-10-0415

Exposures/Releases	Release	Release	Release
Scenario	**Use: Flame retardant additive for plastics**	**Use: Flame retardant additive for plastics**	**Use: Flame retardant additive for plastics**
Sites	**1**	**1**	**1**
Media	**Water or Air or Incineration or Landfill**	**Water or Incineration or Landfill**	**Water or Incineration or Landfill**
Descriptor A	Output 2	Output 2	Conservative
Quantity A (kg/site/day)	1.3E+1	2.5E+1	2.4E+1
Frequency A (day/year)	20	20	167
Descriptor B			
Quantity B (kg/site/day)			
Frequency B (day/year)			
From	Unloading Solid Raw Material from Transport Containers	Cleaning Solid/ Powder Residuals from Containers Used to Transport the Raw Material	Equipment Cleaning Losses of Liquids from Multiple Vessels
Workers			
Exposure Type			

Engineering Summary: Exposures/Releases	Release	Release	Exposure
Scenario	**Use: Flame retardant additive for plastics**	**Use: Flame retardant additive for plastics**	**Use: Flame retardant additive for plastics**
Sites	**1**	**1**	**1**
Media	**Air**	**Incineration or Landfill**	**Dermal**
Descriptor A	Output 2	Output 2	High End
Quantity A (kg/site/day)	1.0E-3	1.0E+0	3.1E+3
Frequency A (day/year)	167	167	20
Descriptor B			
Quantity B (kg/site/day)			
Frequency B (day/year)			
From	Drying	Further Processing (Cutting, Grinding, etc)	Unloading Solid Raw Material from Transport Containers
Workers			23
Exposure Type			Solid

V. Summary of Exposures/Releases

Engineering Summary: P-10-0415

Exposures/Releases	Exposure		
Scenario	**Use: Flame retardant additive for plastics**		
Sites	**1**		
Media	**Inhalation**		
Descriptor A	Upper Bound		
Quantity A (kg/site/day)	1.5E+2		
Frequency A (day/year)	20		
Descriptor B			
Quantity B (kg/site/day)			
Frequency B (day/year)			
From	Unloading Solid Raw Material from Transport Containers		
Workers			
Exposure Type	Particulate		

VI. Focus Decision and Rationale

Regulatory Actions

Regulatory Decision: PMN Ban Pending and Consent Order Decision Date: 07/11/2010
Type of Decision:

Rationale: P10-0415 will be regulated under the TSCA 5(e) category (neutral organics) Ban Pending Up Front testing under the risk based authority for ecotoxicity concerns and environmental fate concerns and under the exposure based authority for human health concerns. Human health concerns were low-moderate and risks were addressed by the use of PPE as listed in the MSDS. However, use of gloves must be added to the MSDS. The exposure based testing that is desired will be repeated dose 28-day oral toxicity study in rodents (Harmonized Test Guideline: 870.3050), Bacterial reverse mutation test (Harmonized Test Guideline: 870.5100) and Mammalian erythrocyte micronucleus test (Harmonized Test Guideline: 870.5395). Although ecotoxicity concerns were low, the potential risks for the environment were high due to the chronic COC of 1000 ppb being exceeded 116 from 167 release days from use operations. The required risk based ecotoxicity testing will be the acute base set, Fish acute toxicity test (Harmonized Test Guideline: 850.1075), Aquatic Invertebrate acute toxicity test freshwater daphnia (Harmonized Test Guideline: 850.1010), and algal (Harmonized Test Guideline: 850.5400). Fish and daphnia testing will be done using the flow-through method and the static method will be used for algal. The required risk based environmental fate testing will be the Zahn-Wellens test (Harmonized Test Guidelines: 835.3200). A certificate of analysis is required from the submitter, measured concentrations are required, and it is recommended that a RAD representative approve all protocols before beginning testing. This case met 4 EAB's Exposure based criteria and did not meet any CEB's exposure based criteria.

Summary of Releases and Exposures.

EAB Exposure Based review.
Drinking (Surface) Water Dose: 3.80E-01 mg/kg/day
Fish Ingestion Dose: 7.90E-03 mg/kg/day
Inhalation Dose: 3.30E-01 mg/kg/day
Surface Water Release after Treatment: 4.77E+03 kg/yr

Use: Flame retardant additive for plastics
Sites: 1, Days/yr: 20, Number of workers: 23
Inhalation - Particulate: Upper Bound: 1.5E+2 mg/kg/day
Dermal - Particulate: High End: 3.1E+3 mg/kg/day

Water or Air or Incineration or Landfill: Output 2:1.3E+1 kg/site/day
Water or Incineration or Landfill: Output 2:2.5E+1 kg/site/day
Water or Incineration or Landfill: Conservative: 2.4E+1 kg/site/day
Air: Output 2:1.0E-3 kg/site/day
Incineration or Landfill: Output 2:1.0E+0 kg/site/day

Fate releases to water (0% removal) – MAX ADR
SWC: 7730.67 ppb
DW: LADD: 5.95E-04 mg/kg/day, ADR: 0.38 mg/kg/day
FI: LADD: 8.06E-06 mg/kg/day, ADR: 7.90E-03 mg/kg/day
>COC (1000 ppb): 13 days from 20 days.

Fate releases to water (0% removal) – PDM 1

SWC: 7730.67 ppb
DW: LADD: 5.95E-04 mg/kg/day, ADR: 0.38 mg/kg/day
FI: LADD: 8.06E-06 mg/kg/day, ADR: 7.90E-03 mg/kg/day
>COC (1000 ppb): 13 days from 20 days

Fate releases to water (0% removal) – PDM 2
SWC: 2992.52 ppb
DW: LADD: 1.92E-03 mg/kg/day, ADR: 0.15 mg/kg/day
FI: LADD: 2.60E-05 mg/kg/day, ADR: 3.06E-03 mg/kg/day
>COC (1000 ppb): 61 days from 167 days

Fate releases to water (0% removal) – MAX LADD
DW: LADD: 2.29E-03 mg/kg/day
FI: LADD: 3.10E-05 mg/kg/day

Fate releases to water (0% removal)
SWC: 7730.67 ppb
DW: LADD: 2.29E-03 mg/kg/day, ADR: 3.80E-01 mg/kg/day
FI: LADD: 3.10E-05 mg/kg/day, ADR: 7.90E-03 mg/kg/day

Fugitive Air: LADD: 5.73E-04 mg/kg/day, ADR: 0.33 mg/kg/day

P2 Rec Comments:

Testing:

Final Recommended:

Health:

Eco:

Fate:

Other:

SAT Report

PMN Number: **P-10-0415**
SAT Date: **6/29/2010**
Print Date: **3/6/2015**

Related cases: [redacted]

Health related cases:
Ecotox related cases: Analog: [redacted].

Concern levels:

Type of Concern:	**Health**	**Eco**	**Comments**
Level of Concern:	1-2	1	

Persistence	**Bioaccum**	**Toxicity**	**Comments**
3	1	2	
		Awaiting Human Health Entry	
		Awaiting Human Health Entry	
		Awaiting Human Health Entry	

Exposure Based Review:

Health: Yes
Ecotox: No

Routes of exposure:

Health: Dermal Drinking Water Inhalation
Ecotox: All releases to water
Fate: ;

Keywords:

Keywords:

Summary of Assessment:

Fate:

Fate Summary: P-10-0415

FATE:
Solid with MP = 200 C (E)
log Kow = 0.07 (E)
S = 116 mg/L at 25 C (E)

VP < 1.0E-6 torr at 25 C (E)
BP > 400 C (E)
H < 1.00E-8 (E)
log Koc = 3.37 (E)
log Fish BCF = 0.50 (E)
log Fish BAF = -0.04 (E)
POTW removal (%) = 0-50 via sorption
Time for complete ultimate aerobic biodeg ≥ mo
Sorption to soils/sediments = moderate
PBT Potential: P3B1
*CEB FATE: Migration to ground water = moderate

Health:

Health Summary: Absorption is nil through the skin as the neat material, moderate through the skin when in solution, and good through the lungs and GI tract based on physical/chemical properties. Concerns by anology to [redacted] are neurotoxicity (convulsions induced by touch in rats in an acute study, LD50 = 4498 mg/kg (8e-[redacted]); uncertain concern for oncogenicity and effects on the kidney at high doses (NTP TR-245); mutagenicity; and developmental toxicity. Low moderate concern.

Ecotox:

Test Organism	Test Type	Test End Point	Predicted	Measured	Comments
fish	**96-h**	**LC50**	>100		
daphnid	**48-h**	**LC50**	>100		
green algal	**96-h**	**EC50**	>100		
fish	**_**	**chronic value**	>10		
daphnid	**_**	**chronic value**	>10		
algal	**_**	**chronic value**	>10		
Sewage Sludge	**3-h**	**EC50**	**_**		
Sewage Sludge	**_**	**Chronic Value**	**_**		

Ecotox Values Comments:

Factors	Values	Comments
Assessment Factor	10	
Concentration of Concern (ppb)	1000	
SARs	neutral organic chemicals	
SAR Class	melamine	
Ecotox Category		

Ecotox Factors Comments:

SAT Chair: Becky Jones

INITIAL REVIEW ENGINEERING REPORT [redacted]

P-10-0415
Focus Ready Draft 7/11/2010 11:00:00 PM

ENGINEER: Choudhary \ DDH
PV (kg/yr): 200000

Revision Notes/Assessment Overview:

SUBMITTER: H&M Metal Processing (submitter)

USE: Flame retardant product for polymeric products (plastics, etc.). It acts by a combination of effects: in contact with heat it decomposes, acting as a heat sink, and releases inert nitrogen gases which dilute the oxygen and flammable gases. It also chemically and physically (char formation) inhibits burning, and contributes to intumnescent coating formation (blows char into a protective foam which prevents dripping). CA 152:548956 - Fireproofing agent. CA 152:145887 - To improve fire resistance.Analog [redacted] is used as a flame retardant in plastic resins.

OTHER USES: [redacted].

MSDS: Yes **LABEL**: No

Gen Eqpt: wear safety glasses/ wear overall or apron/ adopt good industrial hygiene practice/ work in ventilated space
Respirator: no respirator recommendation in MSDS
Health Effects: avoid eye or skin contact/ the product contains no substances classified as being a hazard to health
TLV/PEL: - Melam - 8 hour TWA - UK EH40
LVE PPE:

CRSS: (6/27/2010 11:00:00 PM):
Chemical Name: 1,3,4,6,7,9,9b-Heptaazaphenalene-2,5,8-triamine
S-H2O: 0.116 g/L @
VP: 1.0E-6 torr @
MW: 218 0.0%<500 0.0%<1000
Physical State and Misc CRSS Info:
Neat: Solid **Mfg:** NK: Import
Proc/Form: NA **End Use:** Solid: 5-7% PMN material entrained in polymer matrix. Submitted Data: None, all submitted estimations are from EPI. Estimated Data: BP = 472 °C (EPI), 440 °C (ACD); VP = 2.0E-9 torr (EPI), 6.0E-8 torr (ACD); WS = 0.116 g/L (EPI), 0.094 g/L (ACD); logP = 0.07 (EPI), -1.56 (ACD).

Consumer Use: No

SAT (concerns): (6/28/2010 11:00:00 PM):

Migration to groundwater:
PBT rating: P3 **B**1 **T**2
Health: 1-2, Dermal, Drinking Water, Inhalation, XB Testing (Testing desired)
Eco: 1, Water (All releases to water with a CC = 1000 ppb), XB Testing (Testing desired)

OCCUPATIONAL EXPOSURE RATING: 2-3B

NOTES & KEY ASSUMPTIONS:

Generated by the 06/07/2005 version of ChemSTEER. The PMN is import only; therefore, manufacturing was not assessed. // The PMN is used as a flame retardant additive for various plastics. Once the PMN is compounded within the thermoplastic polymer pellets or product, no occupational exposures or environmental releases of the PMN are expected to occur since the PMN will be physically encapsulated and entrained in the compounded polymer. // This is an exposure-based review for human health. No CEB exposure-based criteria were met. SAT requirements were for inhalation, dermal, drinking water and all releases to water. // No same submitter past cases were found. The following different-submitter, similar-use past cases were referenced for consistency: [redacted], [redacted]. All past cases assessed inhalation exposure and dust releases from unloading of the solid PMN (consistent with this IRER). All past cases did not assess exposures or releases to the chemical after it was compounded in the polymer (consistent with the current IRER). Note this IRER did present submission estimates for releases from drying and further processing per the submission. // The PMN is a nitrogen containing compound. Its usage can result in the formation of NOx. The PMN may contribute to the formation of Nitrsoamines in rubber, plastic, etc. applications. There is currently an Action Plan being evaluated for Nitrosamines.

POLLUTION PREVENTION CONSIDERATIONS:
P2 Claim: The substance when used as a flame retardant has the advantages of being low cost, halogen free, and offering excellent ignition resistance. The substance is known to retard flame propagation and has been demonstrated to offer good performance with regard to corrosion, smoke formation and the relatively low toxicity of the combustion gases (oxides of carbon and nitrogen). The following benefits are proposed for the substance compared to other flame retardants available at this time: - The substance is of low proposed toxicity (by comparison with results on analogous substances) compared to other flame retardants currently used in similar processes, e.g. Polybrominated biphenyls (PBBs) and Polybrominated diphenyl ethers (PBDE), currently used commercially in the manufacture of similar products. - The substance is not currently classified as 'hazardous" to either man or the environment under EU legislation. - This substance is particularly effective in nitrogen containing polymers (polyurethanes, polyamides), because of the synergy with the nitrogen content of the substance. - The predicted (but unmeasured) low water solubility results in greater durability of final products. - Based on substances of this type, the substance is believed to offer high levels of UV absorption, thus helping protect plastics from damage by sunlight (enhanced durability). - No environmental issues - the substance contains only nitrogen, carbon and hydrogen, and has low predicted toxicity and environmental effects compared to halogenated flame retardants The substance is understood to degrade finally to ammonia and urea by natural action. - The substance demonstrates effective improvement of fire safety through multiple effects (acting as a heat sink; release of inert nitrogen gases to dilute the oxygen and flammable gases; chemically and physically (char formation) inhibits burning; contributes to intumnescent coating formation (blows char into a protective foam which prevents dripping)). - It is being used in an increasing range of polymers and applications, including high temperature polymer processing. - The substance has been assessed under the Restriction of Hazardous Substances Directive (RoHS) 2002/95/EC in the EU for heavy metal content, and has been demonstrated to have negligible amounts of this type of potentially hazardous compounds, as detailed in the supporting information to this PMN. Please refer to Attachment 6. Based on the above factors, it is proposed that the substance is a more environmentally friendly substitute than current flame retardants currently used commercially in the manufacture of similar products.

P2 REC:

EXPOSURE-BASED REVIEW: Yes **(0 criteria met)**

1) # of workers exposed: 23 **>1000?** No
2) >100 workers with > 10 mg/day inhalation exposure: No
3) (a) >100 workers w/1-10 mg/day inh. exp. & >100 days/yr: No
(b) Routine Dermal Cont: > 250 workers & > 100 days/yr: No

P-10-0415

Use: Flame retardant additive for plastics

Number of Sites/Location: 1 submitter site(s)
H&M Metal Processing
Basis: Submission states 1 site, 100 kg/bt, 2 hr/bt, 1000 bt/yr. ChemSTEER calculates 167 d/yr and approximately 12 bt/day.
Process Description: Unload imported PMN (100% solid) --> Mixing vessel (Per submission, PMN is present at concentration of 5-7% in mixing vessel --> Extrusion/molding process --> drying --> Further processing or packaging of final flame retardant polymer pellets or finished articles, PMN entrained in polymer pellets (per CRSS). CEB did not assess industrial exposure and releases from potential further processing of the pellets because the PMN chemical will be physically encapsulated and entrained in the pellet (consistent with past cases [redacted]). (per submission and CRSS)

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

IRER Note: The daily releases listed for any source below may coincide with daily releases from the other sources to the same medium. Submission states equipment cleaning effluents that may contain small amounts of PMN would be disposed of in accordance with applicable local, state or federal requirements. If the equipment cleaning effluents are solvent based, then these are recommended to be sent off site for disposal via| incineration. Aqueous effluents will be pre-treated via aeration, chemical treatment and microbial treatment prior to release to local POTWs.|

Water or Air or Incineration or Landfill
Output 2: 1.3E+1 kg/site-day over 20 day/yr from 1 sites or 2.5E+2 kg/yr
to: Air, water, incineration, or land (dust model)
from: Unloading Solid Raw Material from Transport Containers
basis: CEB assesses dust releases per the 2007 Dust model - 0.5% release to air, water, incineration, or land.

Water or Incineration or Landfill
Output 2: 2.5E+1 kg/site-day over 20 day/yr from 1 sites or 5.0E+2 kg/yr
to: Uncertain
from: Cleaning Solid/ Powder Residuals from Containers Used to Transport the Raw Material
basis: EPA/OPPT Solid Residuals in Transport Containers Model, CEB standard 1% residual. Submission estimates < 0.1 kg/bt lost during charging) disposed of in accordance with applicable local, state or federal requirements. CEB standard model assessed as conservative.

Water or Incineration or Landfill
Conservative: 2.4E+1 kg/site-day over 167 day/yr from 1 sites or 4.0E+3 kg/yr
to: Uncertain
from: Equipment Cleaning Losses of Liquids from Multiple Vessels
basis: EPA/OPPT Multiple Process Vessel Residual Model, CEB standard 2% residual. Submission estimates < 0.2 kg/bt (0.1 kg/bt from mixing and 0.1 kg/bt from extrusion) disposed of in accordance with applicable local, state or federal requirements. CEB assesses standard model as conservative.

Air
Output 2: 1.0E-3 kg/site-day over 167 day/yr from 1 sites or 1.7E-1 kg/yr
to: Stack air, per submission
from: Drying
basis: Submission estimates <0.001 kg/bt PMN released to stack air during drying process.

Incineration or Landfill
Output 2: 1.0E+0 kg/site-day over 167 day/yr from 1 sites or 1.7E+2 kg/yr
to: Uncertain
from: Further Processing (Cutting, Grinding, etc)
basis: Submission states 1 kg/bt released during further processing (cutting, grinding, etc). Because the PMN is part of a solid plastic, CEB assumes this release would be to incineration or landfill.

RELEASE TOTAL

4900 kg/yr - all sites

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY

Tot. # of workers exposed via assessed routes: 23
Basis:

Dermal:

Exposure to Solid
High End: 3.1E+3 mg/day over 20 days/yr
Number of workers (all sites) with Dermal exposure: 23
Basis: Unloading Solid Raw Material from Transport Containers; EPA/OPPT Direct 2-Hand Dermal Contact with Solids Model.

Inhalation:

Exposure to Particulate
Upper Bound: 1.5E+2 mg/day over 20 days/yr
Number of workers (all sites) with Inhalation exposure: 23
Basis: Unloading Solid Raw Material from Transport Containers; OSHA PNOR PEL-Limiting Model. Submission indicated potential exposure for unloading as well as container disposal and equipment cleaning disposal. CEB has included all 3 activities in this estimate.

INHALATION MONITORING DATA REVIEW

1) Uncertainty (estimate based on model, regulatory limit, or data not specific to industry): Yes
2) (a) Exposure level > 1 mg/day? Yes
(b) Hazard Rating for health of 2 or greater? No
Inhalation Monitoring Data Desired? Yes (both criteria met)

INITIAL REVIEW EXPOSURE REPORT (IRExR)

Chemical ID: P-10-0415 **Reviewer: Delpire/SS**

Results Table: Dose, Concentration, and Days Exceeded Results Summary

Exposure Scenario[1]			Water				Landfill	Stack Air		Fugitive Air	
Drinking Water			Fish Ingestion								
ADR		LADD	ADR	LADD	7Q10[4] CC = 1000	PDM Days Exceeded	LADD	ADR	LADD	ADR	LADD
Release activity(ies)[2]; exposure calculation(s)[3]	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	µg/l	# Days	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day
USE: Max ADR: max acute eco	**3.80E-01**	---	**7.90E-03**	---	**7.73E+03**	---	---	---	---	**3.30E-01**	---
USE: PDM1	---	---	---	---	**7.73E+03**	**13**	---	---	---	---	---
USE: PDM2	---	---	---	---	**2.99E+03**	**61**	---	---	---	---	---
USE: Max LADD	---	**2.29E-03**	---	**3.10E-05**	---	---	**2.29E-03**	---	---	---	**5.73E-04**

1 Exposure scenario titles consist of release activity followed by exposure calculation abbreviation.
2 Release activities are from engineering report's Manufacturing (Mfg), Processing (Proc) and Use release activity labels. Multiple release activities are combined in one exposure scenario if their releases occur at same location.
3 Exposure calculations are Acute Dose Rate (ADR), Lifetime Average Daily Dose (LADD), and Probabilistic Dilution Model (PDM). There may be one, two, or all three exposure calculations per exposure scenario.
CC is the aquatic concentration of concern.
4 This column displays concentration values for the 7Q10 streamflow, which is defined as the average daily streamflow of the seven consecutive days of lowest flow within a ten year period.

Results Table: Exposure Based (XB)/Persistent (P2B2) Criteria

Parameter	Exp Based	Persistent	Exceedance Value
Drinking (Surface) Water Dose (mg/kg/day)	Yes	NA	**3.80E-01**
Fish Ingestion Dose (mg/kg/day)	Yes	NA	**7.90E-03**
Inhalation Dose (mg/kg/day)	Yes	NA	**3.30E-01**
Groundwater Dose (mg/kg/day)	No	NA	
Surface Water Release After Treatment (kg/yr)	Yes	NA	**4.77E+03**
Total Release After Treatment (kg/yr)	No	NA	
Consumer Use?	No		

Fate test recommendations: Zahn-Wellens test 835.3200 (OECD 302B). Gives first-cut snapshot of possible sorption & ultimate biodeg. in sludge.

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415 Assessor: Delpire/SS

ENVIRONMENTAL RELEASES

Scenario#:1 Number of Release Sites: 1.

Release Activity: USE: Max ADR

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	1240.00 (kg/yr)	0.00 (kg/yr)	N/A (kg/yr)	260.02 (kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	20.00	0.00/0.00	N/A	20.00
Per Site Release:	62.00 (kg/site/day)	0.00/0.00 (kg/site/day)	N/A (kg/site/day)	13.00 (kg/site/day)

Remarks:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 1 Number of Sites: 1 RELEASE ACTIVITY:USE: Max ADR

SIC-CODE DESCRIPTION: Plastic Resins & Synthetic Fiber Manufacture

SIC-CODE (S): 2821,2823,2824 EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
0.00	20.	62.	62.00	0.00	3.16

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER									
PLANT TYPE	% ILE FACILITY	STREAM FLOW (MLD)				STREAM CONC. (µg/l)			
		Harmonic Mean	30Q5	7Q10	1Q10	Harmonic Mean	30Q5	7Q10	1Q10
ALL	50	1321.81	604.40	403.46	328.18	46.91	102.58	153.67	188.92
ALL	10	44.53	13.72	8.02	7.44	1392.32	4518.95	7730.67	8333.33

DRINKING WATER AND FISH INGESTION EXPOSURE ESTIMATES						
Exposure Units	Drinking Water Results		Drinking Water Units	Fish Ingestion Results		Fish Ingestion Units
	50%	10%		50%	10%	
Cancer						
$LADD_{pot}$	2.00E-05	5.95E-04	mg/kg/day	2.71E-07	8.06E-06	mg/kg/day
$LADC_{pot}$	1.03E-03	3.05E-02	mg/L	3.25E-03	9.64E-02	mg/kg
Acute						
ADR_{pot}	8.57E-03	0.38	mg/kg/day	2.66E-04	7.90E-03	mg/kg/day

SIC Code Comments:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415

INHALATION EXPOSURE ESTIMATES (POST-TREATMENT)

SCENARIO #: 1 RELEASE ACTIVITY:USE: Max ADR

RELEASE DESCRIPTION:

METHOD OF CALCULATION: Screen3

EXPOSED POPULATION: Adult

Number of Sites:	1.	
Per Site Fugitive Release:	13.00	kg/site/day
Fugitive Release Days per Year:	20.00	days
% Removal via Fugitive Release:	0.00	%
Total Fugitive Release:	260.02	kg/yr
Max Annual Average Air Concentration (Fugitive):	7.79	µg/m^3
Max 24 Hour Average Air Concentration(Fugitive):	1780.00	µg/m^3
Per Site Stack Release:	NA	kg/site/day
Stack Release Days per Year:	NA	days
% Removal via Stack Release:	99.90	%
Total Stack Release:	NA	kg/yr
Max Annual Average Air Concentration (Stack):	0.00	µg/m^3
Max 24 Hour Average Air Concentration (Stack):	0.00	µg/m^3

Exposure Units	Results (Stack)	Results (Fugitive)	ASSUMPTIONS			
			ED (years)	AT (years)	BW (kg)	Inh. Rate (m^3/hr)
Cancer						
$LADD_{pot}$ (mg/kg/day)	N/A	5.73E-04	30.00	75.00	71.80	0.55
$LADC_{pot}$ (mg/m^3)	N/A	3.12E-03	30.00	75.00	NA	NA
Acute						
ADR_{pot} (mg/kg/day)	N/A	0.33	NA	1 day	71.80	0.55

Inhalation Comments:

Stack Parameter Data		Fugitive Parameter Data		
Stack Height	10.00	Release Height:	3.00	m
Inside Stack Diameter:	0.10	Length of Release Opening:	10.00	m
Stack Gas Exit Velocity:	0.10	Width of Release Opening:	10.00	m
Stack Gas Temperature:	293.00			

Meteorological and Terrain Information:

Surrounding Land Use:	Rural	
Terrain Height:	0.00	m
Distance to Residence of Interest:	100.00	m
Meteorological Class:	Full	
Stability Class:	NA	
Wind Speed:	NA	

Downwash Information:

Facility Length:	NA	m
Facility Width:	NA	m
Facility Height:	NA	m

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415 Assessor: Delpire/SS

ENVIRONMENTAL RELEASES

Scenario#:2 Number of Release Sites: 1.

Release Activity: USE: PDM1

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	1240.00	0.00	N/A	0.00
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	20.00	0.00/0.00	N/A	0.00
Per Site Release:	62.00	0.00/0.00	N/A	0.00
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 2 Number of Sites: 1 RELEASE ACTIVITY:USE: PDM1

SIC-CODE DESCRIPTION: Plastic Resins & Synthetic Fiber Manufacture

SIC-CODE (S): 2821,2823,2824 EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
0.00	20.	62.	62.00	0.00	3.16

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER									
PLANT TYPE	% ILE FACILITY	STREAM FLOW (MLD)				STREAM CONC. (µg/l)			
		Harmonic Mean	30Q5	7Q10	1Q10	Harmonic Mean	30Q5	7Q10	1Q10
ALL	50	1321.81	604.40	403.46	328.18	46.91	102.58	153.67	188.92
ALL	10	44.53	13.72	8.02	7.44	1392.32	4518.95	7730.67	8333.33

DRINKING WATER AND FISH INGESTION EXPOSURE ESTIMATES						
Exposure Units	Drinking Water Results		Drinking Water Units	Fish Ingestion Results		Fish Ingestion Units
	50%	10%		50%	10%	
Cancer						
$LADD_{pot}$	2.00E-05	5.95E-04	mg/kg/day	2.71E-07	8.06E-06	mg/kg/day
$LADC_{pot}$	1.03E-03	3.05E-02	mg/L	3.25E-03	9.64E-02	mg/kg
Acute						
ADR_{pot}	8.57E-03	0.38	mg/kg/day	2.66E-04	7.90E-03	mg/kg/day

SIC Code Comments:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415

SIC CODE EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 2 RELEASE ACTIVITY: USE: PDM1

SIC CODE DESCRIPTION: Plastic Resins & Synthetic Fiber Manufacture

ASSOCIATED SIC CODES: 2821,2823,2824

SIC CODE RESULTS

COC (µg/L)	Percent of Year COC Exceeded	Number of Days COC Exceeded	Release days/year	Loading (kg/site/day)	Waste Water Treatment (%)	High/Avg Analysis
1000.00	3	13	20.00	62.00	0.00	High

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415 Assessor: Delpire/SS

ENVIRONMENTAL RELEASES

Scenario#:3 Number of Release Sites: 1.

Release Activity: USE: PDM2

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	4008.00	0.00	N/A	0.00
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	167.00	0.00/0.00	N/A	0.00
Per Site Release:	24.00	0.00/0.00	N/A	0.00
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Remarks:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 3 Number of Sites: 1 RELEASE ACTIVITY:USE: PDM2

SIC-CODE DESCRIPTION: Plastic Resins & Synthetic Fiber Manufacture

SIC-CODE (S): 2821,2823,2824 EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
0.00	167.	24.	24.00	0.00	3.16

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER									
PLANT TYPE	% ILE FACILITY	STREAM FLOW (MLD)				STREAM CONC. (µg/l)			
		Harmonic Mean	30Q5	7Q10	1Q10	Harmonic Mean	30Q5	7Q10	1Q10
ALL	50	1321.81	604.40	403.46	328.18	18.16	39.71	59.49	73.13
ALL	10	44.53	13.72	8.02	7.44	538.96	1749.27	2992.52	3225.81

DRINKING WATER AND FISH INGESTION EXPOSURE ESTIMATES						
Exposure Units	Drinking Water Results		Drinking Water Units	Fish Ingestion Results		Fish Ingestion Units
	50%	10%		50%	10%	
Cancer						
$LADD_{pot}$	6.48E-05	1.92E-03	mg/kg/day	8.77E-07	2.60E-05	mg/kg/day
$LADC_{pot}$	3.32E-03	9.86E-02	mg/L	1.05E-02	0.31	mg/kg
Acute						
ADR_{pot}	3.32E-03	0.15	mg/kg/day	1.03E-04	3.06E-03	mg/kg/day

SIC Code Comments:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415

SIC CODE EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 3 RELEASE ACTIVITY: USE: PDM2

SIC CODE DESCRIPTION: Plastic Resins & Synthetic Fiber Manufacture

ASSOCIATED SIC CODES: 2821,2823,2824

SIC CODE RESULTS

COC (µg/L)	Percent of Year COC Exceeded	Number of Days COC Exceeded	Release days/year	Loading (kg/site/day)	Waste Water Treatment (%)	High/Avg Analysis
1000.00	17	61	167.00	24.00	0.00	High

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415 Assessor: Delpire/SS

ENVIRONMENTAL RELEASES

Scenario#:4 Number of Release Sites: 1.

Release Activity: USE: Max LADD

Release Description:	WATER	LANDFILL Non-sludge/Sludge	STACK	FUGITIVE
Total Releases:	4768.00 (kg/yr)	4935.00 (kg/yr)	N/A (kg/yr)	260.17 (kg/yr)
		Non-sludge/Sludge		
Release Days/yr:	1.00	1.00/0.00	N/A	1.00
Per Site Release:	4768.00 (kg/site/day)	4935.00/0.00 (kg/site/day)	N/A (kg/site/day)	260.17 (kg/site/day)

Remarks:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415

SIC-CODE BASED HUMAN AND AQUATIC EXPOSURES TO SURFACE WATER RELEASES

SCENARIO #: 4 Number of Sites: 1 RELEASE ACTIVITY:USE: Max LADD

SIC-CODE DESCRIPTION: Plastic Resins & Synthetic Fiber Manufacture

SIC-CODE (S): 2821,2823,2824 EXPOSED POPULATION: Adult

WWT REMOVAL (%)	RELEASE DAYS	PRETREATMENT RELEASE (kg/site/day)	POSTTREATMENT RELEASE (kg/site/day)	DWT (%)	BCF (L/kg)
0.00	1.	4768.	4768.00	0.00	3.16

AQUATIC EXPOSURE ESTIMATES - SURFACE WATER									
PLANT TYPE	% ILE FACILITY	STREAM FLOW (MLD)				STREAM CONC. (µg/l)			
		Harmonic Mean	30Q5	7Q10	1Q10	Harmonic Mean	30Q5	7Q10	1Q10
ALL	50	1321.81	604.40	403.46	328.18	N/A	N/A	N/A	N/A
ALL	10	44.53	13.72	8.02	7.44	N/A	N/A	N/A	N/A

DRINKING WATER AND FISH INGESTION EXPOSURE ESTIMATES						
Exposure Units	Drinking Water Results		Drinking Water Units	Fish Ingestion Results		Fish Ingestion Units
	50%	10%		50%	10%	
Cancer						
$LADD_{pot}$	7.71E-05	2.29E-03	mg/kg/day	1.04E-06	3.10E-05	mg/kg/day
$LADC_{pot}$	3.95E-03	0.12	mg/L	1.25E-02	0.37	mg/kg
Acute						
ADR_{pot}	N/A	N/A	mg/kg/day	N/A	N/A	mg/kg/day

SIC Code Comments:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415

DRINKING WATER EXPOSURE ESTIMATES FROM LANDFILL RELEASES

SCENARIO #: 4 ACTIVITY: USE: Max LADD

RELEASE DESCRIPTION:

EXPOSED POPULATION: Adult

NUMBER OF SITES	NON-SLUDGE LANDFILL RELEASE AND DAYS OF RELEASE (kg/site/day)/(days)	LANDFILLED SLUDGE[1] AND DAYS OF RELEASE (kg/site/day)/(days)	MIGRATION DESCRIPTOR[2]	ADSORPTION TO WASTEWATER SLUDGE (%)	DRINKING WATER TREATMENT (%)
1.	4935.00/1.00	0.00/0.00	Moderate	0.00	0.00

[1] Landfilled sludge equals the fraction adsorbed to wastewater treatment sludge times the surface water pre-treatment release.

[2]

Migration Descriptor	Log Koc	Groundwater Concentration (GWC) (mg/L per kg release)
Negligible	no migration	None
Negligible to slow	> 4.5	3.21E-6
Slow	<4.5 to 3.5	2.67E-5
Moderate	<3.5 to 2.5	5.95E-5
Rapid	<2.5	7.55E-5

Exposure Units	Results	ASSUMPTIONS			
		ED (years)	AT (years)	BW (kg)	IR (L/day)
Cancer					
$LADD_{pot}$ (mg/kg/day)	2.29E-03	30.00	75.00	71.80	1.40
$LADC_{pot}$ (mg/L)	0.12	30.00	75.00	NA	NA

REMARKS:

INITIAL REVIEW EXPOSURE REPORT

Chemical ID: P-10-0415

INHALATION EXPOSURE ESTIMATES (POST-TREATMENT)

SCENARIO #: 4 RELEASE ACTIVITY:USE: Max LADD

RELEASE DESCRIPTION:

METHOD OF CALCULATION: Screen3

EXPOSED POPULATION: Adult

Number of Sites:	1.	
Per Site Fugitive Release:	260.17	kg/site/day
Fugitive Release Days per Year:	1.00	days
% Removal via Fugitive Release:	0.00	%
Total Fugitive Release:	260.17	kg/yr
Max Annual Average Air Concentration (Fugitive):	7.79	µg/m^3
Max 24 Hour Average Air Concentration(Fugitive):	N/A	µg/m^3
Per Site Stack Release:	NA	kg/site/day
Stack Release Days per Year:	NA	days
% Removal via Stack Release:	99.90	%
Total Stack Release:	NA	kg/yr
Max Annual Average Air Concentration (Stack):	0.00	µg/m^3
Max 24 Hour Average Air Concentration (Stack):	N/A	µg/m^3

Exposure Units	Results (Stack)	Results (Fugitive)	ASSUMPTIONS			
			ED (years)	AT (years)	BW (kg)	Inh. Rate (m^3/hr)
Cancer						
$LADD_{pot}$ (mg/kg/day)	N/A	5.73E-04	30.00	75.00	71.80	0.55
$LADC_{pot}$ (mg/m^3)	N/A	3.12E-03	30.00	75.00	NA	NA
Acute						
ADR_{pot} (mg/kg/day)	N/A	N/A	NA	1 day	71.80	0.55

Inhalation Comments:

Stack Parameter Data		Fugitive Parameter Data		
Stack Height	10.00	Release Height:	3.00	m
Inside Stack Diameter:	0.10	Length of Release Opening:	10.00	m
Stack Gas Exit Velocity:	0.10	Width of Release Opening:	10.00	m
Stack Gas Temperature:	293.00			

Meteorological and Terrain Information:

Surrounding Land Use:	Rural	
Terrain Height:	0.00	m
Distance to Residence of Interest:	100.00	m
Meteorological Class:	Full	
Stability Class:	NA	
Wind Speed:	NA	

Downwash Information:

Facility Length:	NA	m
Facility Width:	NA	m
Facility Height:	NA	m